Faculty of Education

Design, Implementation and Evaluation of an In-Context Learning Support Program for First Year Education Students and its Impact on Educational Outcomes

Barbara Iris de la Harpe

"This thesis is presented as part of the requirements for the award of the Degree of Doctor of Philosophy of the Curtin University of Technology"

June, 1998

Abstract

This research was concerned with furthering theoretical and practical understanding of student learning at university through a longitudinal, cross-sectional, in-depth study of first year students in a specific learning context, namely Educational Psychology. The main aim of the study was to investigate ways of assisting students to be effective learners. The particular role that affect played in learning and the relationship between learning behaviour and learning outcomes, was explored. A Conceptual Model of student learning incorporating student cognition, metacognition, motivation, affect and academic performance in a specific social and cultural context, underpinned the study. The study documented the design, implementation and evaluation – from both the students' and teacher's perspectives – of an in-context learning support program for first year students, using both quantitative and qualitative methodologies.

The program was based on a theoretical framework which integrated cognitive, behavioural and social learning perspectives and focussed on increasing students' repertoire of learning strategies, promoting their higher level thinking and understanding, developing their metacognitive skills and managing their affect. It included an emphasis on student goal setting and time management, reading and writing strategies, learning for tests and exams, self-management, reflecting on and evaluating learning, and dealing with test anxiety.

The main findings of the study were that providing in-context learning support was associated with positive changes in students' learning strategy use, motivational orientations, and affective reactions. Students valued teacher support and instructional strategies that promoted active learning. The instructor found that providing learning support was more challenging and rewarding than teaching content alone. The role of context – in particular, assessment tasks – in learning, was highlighted. The implications for teaching and learning were examined and the Conceptual Model was further refined. The research resulted in a more holistic and integrated perspective on learning support provision and on the role of cognitive, metacognitive, motivational and affective factors, and academic performance, in student learning.

Acknowledgements

I wish to thank most sincerely;

my supervisors, *Associate Professor Alex Radloff* and *Professor Lesley Parker*, for their advice, support and guidance through the phases of my study,

my mentors, *Associate Professor Alex Radloff* and *Dr Joanne Samson*, for being such exemplary role models,

my Associate supervisor, *Dr Larry Nelson*, for his statistical advice,

the Chair of my thesis committee, *Dr Graham Dellar*, for his support and advice,

Cheryl Hough for her help with formatting and the setting up of my master document, and for her encouragement and friendship,

Paul Delane for his help with the data entry and *Lawley Yukich* for his help with the quantitative data analysis,

colleagues and *friends* in the Faculty of Education at Curtin for their support and inspiration, and the *Faculty* for supporting my research,

my parents, *Fred* and *Joan Kelly*, for showing me the value of education and the importance of persistence, and

my husband, *Andrew*, for his love, support and friendship, for encouraging me to keep going, and for his unfailing belief that I would finish what I started.

I would also like to thank the *first year students* who so willingly participated in this study. Without their input and feedback this study would not have been possible.

Table of Contents

Abstract i

Acknowledgements ii

Table of Contents iii

List of Figures vi

List of Tables viii

Chapter 1 Introduction and overview

Overview of chapter 2
Objectives of study 3
Background and rationale 4
Focus of present study 15
Research questions and summary of methodology 16
Significance of study 21
Overview of thesis 23

Chapter 2 Literature review

Teaching and learning at university 26
Defining, developing, measuring and assesing learning strategies 36
Conceptual framework 51

Chapter 3 Methodology

Phase 1: Design of learning support program 68
Phase 2: Implementation of learning support program 81
Phase 2: Evaluation of learning support program 85
Phase 3: Analysis of data 105
Phase 4: Design of expanded learning support program 112
Phase 4: Implementation of learning support programs 118
Phase 4: Evaluation of learning support programs 120
Phase 5: Analysis of data 122
Validity and reliability of data 127
Overview of the five phases of the study 129

Chapter 4 Results and interpretations: Phase 2

Research questions 3: 132
Does providing in-context learning support enhance student learning in an Educational Psychology course?
Research question 4: 158
What are the students' and instructor's perceptions and feelings as they engage in a learning support program?
Research question 5: 182
From the students' perspective, which aspects of the instructional context specifically, teaching style and instructional strategies, facilitate their learning?

Chapter 5 Results and interpretations: Phase 4

Research question 3: 191
Does providing in-context learning support enhance student learning in an Educational Psychology course?
Research question 4: 209
What are the students' and instructor's perceptions and feelings as they engage in a learning support program?
Research question 5: 223
From the students' perspective, which aspects of the instructional context specifically, teaching style and instructional strategies, facilitate their learning?
Research question 6: 228
What is the most appropriate length and timing for a program designed to enhance first year students' learning?
Research question 7: 234
Is there a relationship between learning behaviour and academic performance?

Chapter 6 Discussion and implications

Summary of findings 245
Discussion of findings 249
The Conceptual Model 255
Implications for teaching and learning 258

Chapter 7 Conclusions

Strengths and significance of study 283
Limitations of study 285
Recommendations for educational practice 287
Suggestions for future research 289
Summary of study 290
Final comments 297

References 298

Appendices 322

Appendix 3.1	Numbered feedback sheet	323
Appendix 3.2	How to do well at university	325
Appendix 3.3	Tasks to be completed list	328
Appendix 3.4	How to study for exams	329
Appendix 3.5	Perceptions during the semester	333
Appendix 3.6	Implementation details of support program	335
Appendix 3.7	Examples of Ed101 short answer test questions and multiple choice test items	338
Appendix 3.8	Interview schedule Semester 1,995	340
Appendix 3.9	Perceptions survey	343
Appendix 3.10	SATL survey	347
Appendix 3.11	Letter to students	350
Appendix 3.12	Thank you letter to students	351
Appendix 3.13	Node list with definitions	352
Appendix 3.14	Summarisation rules	363
Appendix 3.15	Overhead	364
Appendix 3.16	Summary checklist	365
Appendix 3.17	Addendum to Ed102 Unit Guide	366
Appendix 3.18	Summary proforma	367
Appendix 3.19	Numbered feedback sheet	368
Appendix 3.20	Implementation details of support program	370
Appendix 3.21	Examples of Ed102 short answer test questions and multiple choice test items	372
Appendix 3.22	SATL survey	374
Appendix 3.23	Internal reliability coefficients	377
Appendix 4.1	"Pre-Post" effect sizes : learning strategies	378
Appendix 4.2	Mean and standard deviation scores	379
Appendix 4.3	Origins of learning methods	380
Appendix 4.4	"Pre-Post" effect sizes : motivation	381
Appendix 4.5	"Pre-Post" effect sizes: anxiety	382
Appendix 4.6	Rating of learning strategies	383
Appendix 4.7	Affect adjectives during Semester 1, 1995	384
Appendix 4.8	Affect during Semester 1, 1995	385
Appendix 4.9	Discomfort during semester	386
Appendix 5.1	"Pre-Post" effect sizes: learning strategies	387
Appendix 5.2	Origins of learning methods	388
Appendix 5.3	"Pre-Post" effect sizes: motivation	389
Appendix 5.4	"Pre-Post" effect sizes: anxiety	390
Appendix 5.5	Affect at end of Semester 2 ,1995	391
Appendix 5.6	Rating of learning strategies	392
Appendix 5.7	Affect during Semester 2, 1995	393
Appendix 5.8	Rating of learning strategies	394
Appendix 5.9	MSLQ metacognitive score change	395
Appendix 6.1	Attrition details	396

List of Figures

Figure 1.1	Outline of the five phases of the study	18
Figure 2.1	General Model of College Teaching and Learning	52
Figure 2.2	Conceptual Model underpinning the current study	61
Figure 3.1	Cognitive, Behavioural and Social learning perspectives underlying the approach adopted and strategies selected	69
Figure 3.2	LSG1 and RG1 in Semester 1, 1995	85
Figure 3.3	Outline of data collection in Semester 1, 1995	103
Figure 3.4	The number of MSLQ and STAI questionnaires included in the final analysis of the data collected during Phase 2 of the study	106
Figure 3.5	Section of NUD•IST tree showing cognitive strategies	110
Figure 3.6	LSG2e, LSG2r and RG2 in Semester 2, 1995	119
Figure 3.7	Outline of data collection in Semester 2, 1995	122
Figure 3.8	The number of MSLQ and STAI questionnaires included in the analysis of the data collected during Phase 4 of the study	123
Figure 3.9	The 5 phases of the study indicating the research questions being addressed, the methodology used and the chapters in which the outcomes are presented	130
Figure 4.1	MSLQ "Pre-Post" effect sizes for learning strategy use by LSG1 and RG1 students	133
Figure 4.2	MSLQ "Pre-Post" effect sizes for Motivational Orientations of LSG1 and RG1 students	141
Figure 4.3	STAI "Pre-Post" effect sizes for State and Trait Anxiety of LSG1 and RG1 students	143
Figure 4.4	Number of students rating of great value 14 learning support strategies included in Ed101 in Semester 1, 1995	165
Figure 5.1	MSLQ "Pre-Post" effect sizes for learning strategy use by LSG2e and RG2 students	192
Figure 5.2	MSLQ "Pre-Post" effect sizes for Motivational Orientations of LSG2e and RG2 students	198
Figure 5.3	STAI "Pre-Post" effect sizes for State and Trait Anxiety of LSG2e and RG2 students	200
Figure 5.4	Learning support programs in Phases 2 and 4 of the study	228
Figure 5.5	MSLQ "Pre-Post" effect sizes for learning strategy use by LSG2e and LSG2r students	229
Figure 5.6	MSLQ "Pre-Post" effect sizes for Motivational Orientations of LSG2e and LSG2r students	230
Figure 5.7	STAI "Pre-Post" effect sizes for State and Trait Anxiety of LSG2e and LSG2r students	230
Figure 5.8	MSLQ "Pre-Post" effect sizes for learning strategy use by LSG1 and LSG2r students	231
Figure 5.9	MSLQ "Pre-Post" effect sizes for Motivational Orientation of LSG1 and LSG2r students	232
Figure 5.10	STAI "Pre-Post" effect sizes for State and Trait anxiety of LSG1 and LSG2r students	232

Figure 6.1 The refined Conceptual Model based on McKeachie, Pintrich, Lin and Smith's General Model of College Teaching and Learning, the literature on student learning, and the present study's findings 256

List of Tables

Table 3.1	Number and percentage (rounded to nearest whole number and in brackets) distribution of students by gender and program	82
Table 3.2	The scales, subscales and examples of items in the Motivated Strategies for Learning Questionnaire (MSLQ)	90
Table 3.3	Examples of items on the State-Trait Anxiety Inventory	93
Table 3.4	Sixty adjectives showing the 20 embedded key words on the AACL.	95
Table 3.5	Outline of categories used to code data from interview questions 5, 6, and 7	108
Table 4.1	Number and percentage of LSG1 (n = 15) and RG1 (n = 6) students mentioning the use of cognitive, metacognitive, and resource management strategies when studying for the tests and the examination, and when completing the writing task	135
Table 4.2	Number and percentage of LSG1 (n = 15) and RG1 (n = 6) students mentioning feelings about the learning strategies they used when learning for the tests and the examination, and when completing the writing task	138
Table 4.3	Number and percentage of LSG1 students (n = 15) identifying 6 aspects of the instructional style which made Ed101 different from other courses with descriptions	159
Table 4.4	Number and percentage of LSG1 students (n = 15) identifying 12 aspects of the instructional strategies which made Ed101 different from other courses with descriptions	160
Table 4.5	Top 10 learning support strategies included in the learning support program as rated by LSG1 students (n = 43) on the SATL expressed as percentages	163
Table 4.6	Most circled affect adjectives by LSG1 students on the AACL on 5 occasions during Semester 1, 1995 expressed as percentages	166
Table 4.7	Instructor affective reactions and a summary of selected factors associated with the reaction on 11 occasions during Semester 1, 1995	180
Table 4.8	Number and percentage of students (n =21) identifying 6 aspects of the instructional style which assist them to learn with descriptions	183
Table 4.9	Number and percentage of students (n = 21) identifying 13 aspects of the instructional strategies which assist them to learn with descriptions	185
Table 5.1	Number and percentage of LSG2e (n = 8) and RG2 (n = 8) students mentioning the use of cognitive, metacognitive and resource management strategies when studying for the tests and the examination, and when completing the writing task	194

Table 5.2	Number and percentage of LSG2e (n = 8) and RG2 (n = 8) students mentioning feelings about the learning strategies they used when learning for the tests and the examination, and when completing the writing task	195
Table 5.3	Number and percentage of students LSG2e students (n = 8) identifying 6 aspects of the instructional style which made Ed102 different from other courses with descriptions	210
Table 5.4	Number and percentage of LSG2e students (n = 8) identifying 9 aspects of the instructional strategies which made Ed102 different from other courses with descriptions	210
Table 5.5	Top 10 learning support strategies included in the learning support program as rated by LSG2e students (n = 22) on the SATL expressed as percentages	212
Table 5.6	Most circled affect adjectives by LSG2e students (n = 20) on the AACL on 5 occasions during Semester 2, 1995 expressed as percentages	213
Table 5.7	Instructor affective reactions and a summary of factors associated with the reaction on 8 occasions during Semester 2, 1995	222
Table 5.8	Number and percentage of students (n = 20) identifying 7 aspects of the instructional style which assist them to learn with descriptions	224
Table 5.9	Number and percentage of students (n = 20) identifying 14 aspects of the instructional strategies which assist them to learn with descriptions	226
Table 5.10	Number and percentage of all interviewed students achieving high, medium and low scores on the examination	235
Table 5.11	Number and percentage of students using cognitive learning strategies and their achievement on the Ed101 and Ed102 examination	236
Table 5.12	Number of students (n = 21) using metacognitive self-regulation strategies and their achievement in the Ed101 examination	238
Table 5.13	Number of students (n = 20) using metacognitive self-regulation strategies and their achievement in the Ed102 examination	239

Chapter 1

Introduction and Overview

Overview of chapter
Objectives of study
Background and rationale
Attributes of effective learners
Learning strategy instruction
Educational research issues
Focus of present study
Research questions and summary of methodology
Phase 1
Phase 2
Phase 3
Phase 4
Phase 5
Significance of study
Overview of thesis

Learning at university demands much from students. To be successful learners, students must become part of the learning community and university culture (Astin, 1993; Pascarella & Terenzini, 1991; Tinto, 1987). They need to learn the language of university study, manage the transition from school or the world of work to university, take responsibility for their learning and begin to develop as lifelong learners (Angelo & Cross, 1993; Candy, Crebert, & O'Leary, 1994; McInnis, James, & McNaught, 1995; Thomas, Bol, & Warkentin, 1991). In order to manage these challenges, students need certain attributes and skills. These include, among others, self-knowledge and self-confidence, persistence and a positive view of the value of learning (McKeachie, Pintrich, Lin, & Smith, 1986). Students also need good self-management skills, including the ability to be well organised and to manage time effectively, as well as the ability to manage effort, know when and how to seek help, and how to collaborate with peers (Pintrich, Smith, Garcia, & McKeachie, 1991; Zimmerman, 1986; Zimmerman, 1994). They need to be motivated to learn, to have positive feelings about themselves as learners and about learning, to be able to deal

with their feelings, and to manage the highs and lows of study (Boekaerts, 1993; McCombs, 1991; McCombs & Whistler, 1989; Pintrich & Schrauben, 1992; Zimmerman & Martinez-Pons, 1992). Students also need a well developed set of learning strategies and the metacognitive skills to reflect on and regulate their learning (Brown, 1987; Paris & Winograd, 1990; Weinstein, 1987; Zimmerman & Martinez-Pons, 1992).

Most students entering university need help to develop the attributes and skills outlined above in order for them to be effective learners (Karabenick, 1991; McInnis, et al., 1995). Such help can be provided by universities and discipline instructors are central to the success of any help provided. The study described in this thesis, explored how such help might be provided and the possible impact it may have on learning and teaching.

Overview of chapter

In this chapter, to place the present study in context, the objectives of the study are outlined and the background and rationale for the study are presented in two sections. In the first section, the importance of effective learning for successful study and the necessity for providing appropriate learning support, particularly for Education students, is discussed. In the second section, the methodological issues relevant to this study and associated with researching student learning, are outlined. In addition, the need for in-context, naturalistic research which combines the use of quantitative and qualitative methods, is highlighted. The focus of the study is then outlined, the research questions presented and a summary of the methodology employed to address them, provided. The chapter concludes with a summary of the significance of the study and a brief overview of the thesis.

Objectives of study

This research study was concerned with exploring university student learning, specifically that of students studying a first year Educational Psychology course at Curtin University of Technology, a Western Australian university. The broad aim of the study was to further current theoretical and practical understanding of student learning at university level. More specifically, the purpose of the study was to investigate ways of helping first year university students to be effective learners.

The objectives of this study were to:

- review the literature on student learning and identify a conceptual model of student learning which takes account of students' cognition, metacognition, motivation and affect, and of the teaching and learning context;

- design a learning support program based on accepted theoretical perspectives, and explicitly embed the program in the context of first year Educational Psychology course requirements;

- implement the program in the context of regular teaching by the discipline instructor who was also the researcher;

- evaluate the learning support program from both students' and the instructor's perspectives using qualitative and quantitative methodologies;

- explore the relationship between student learning and academic performance; and

- further refine the conceptual model based on the outcomes of the study.

Background and rationale

Attributes of effective learners

Universities have identified the critical importance of the development of lifelong learning as an outcome of a university education (Crebert, 1994). One of the major characteristics of lifelong learners is that they have a repertoire of learning strategies. Many graduates, however, appear to leave university without these important strategies. This is cause for concern given that these strategies should be necessary for successful university study, for the fulfilment of professional responsibilities and for on-going personal development (Candy, et al., 1994).

Traditionally, effective learning at university was considered a function of individual differences, determined by inherent ability or intelligence, and individual effort. Thus, students who were selectively admitted into universities were expected to study hard and to learn. If they did not succeed academically, simplistic conclusions regarding lack of intellectual ability or effort, were drawn. Notwithstanding the fact that the correlation between academic performance and intelligence as measured by traditional intelligence tests is far from perfect – correlations are usually modest at university level (Wellens cited by van Overwalle, 1989) – little attention has been given to other factors which contribute to the dynamic interactions that appear to define learning in instructional settings. Other factors in the teaching context such as instructor characteristics, instructional methods, curriculum and instructional environment as well as the learner's prior knowledge, beliefs and feelings about learning, and how he/she approaches learning are now acknowledged to play an important role in effective learning (Bandura, 1993; Biggs & Moore, 1993; McKeachie, et al., 1986; McKeachie, Pintrich, Lin, & Smith, 1987; Ramsden, Beswick, & Bowden, 1987; Zimmerman, 1994).

For instance, effective learning, at least in part, is a product of students matching course requirements with personally available learning skills. Effective learners take an active role in their learning, consciously selecting skills for specific purposes and

combining them into a comprehensive plan for learning (Pressley, Woloshyn, Lysynchuk, Martin, Wood, & Willoughby, 1990; Sherman, 1985; Wang & Palincsar, 1989). They recognise and exercise control over learning by consciously selecting skills for each learning task and monitoring and evaluating what worked or did not work and why. Their learning is, therefore, controlled by an "executive control process" (Woolfolk, 1995, p.261) through which they personally and actively define learning tasks and employ learning abilities (Romainville, 1994). The executive control process appears to coordinate accurate interpretations of the assigned tasks and to match these demands and content characteristics to learning abilities (Sherman, 1985). Reflecting on thinking and actions is necessary for effective learning. In fact, reflection has been identified as a critical component of learning (Angelo, 1991b; Atkins & Murphy, 1993). Reflecting on actions and outcomes is needed in order to continue learning and improving outcomes (Atkins & Murphy, 1993). Angelo (1991b), suggests that, in order for students to become lifelong independent learners, they need to "...learn to be self-reflective, to understand why they believe, think, and act as they do - and to value self-reflection" (p. 19).

Overall, therefore, researchers suggest that for university students to be effective learners, students need to have an organised knowledge base; possess a well developed set of learning strategies; accurately assess learning tasks and match their skills to the task; be metacognitive about their learning by effectively planning and monitoring their learning and skill use, and evaluating and adapting their learning, as needed; know what motivates them and know how, when, where, and why they learn best; have positive attitudes towards their learning; be aware of what constitutes good learning outcomes in a range of situations, and ultimately have knowledge and control of their own learning processes (Angelo, 1991b; Beckwith, 1991; Biggs & Moore, 1993; Boulton-Lewis, Wilss, & Mutch, 1996; Garner, 1990; Janssen, 1996; McCombs, 1991; Meece, 1994; Sherman, 1985; Wang & Palincsar, 1989; Weinstein, 1987).

Thus, not only cognitive but metacognitive, motivational and affective variables are recognised as playing an important part in effective learning. Students must, therefore,

possess both *skill* and *will* if they are to be effective learners (McCombs & Marzano, 1990; Paris & Winograd, 1990; Pintrich, 1988; Pintrich & De Groot, 1990).

University students who are undertaking study in Education and will become teachers themselves, need a well developed capacity for effective learning. Improving students' study skills and learning strategies is an essential part of any teacher's professional role (Jones, Bell, & Saddler, 1991). To fulfil this role, however, arguably teachers themselves should be knowledgeable about effective learning and ultimately be effective learners themselves. In order to teach effectively at any level it is necessary to have a thorough understanding of the factors that facilitate learning and to be aware of the effect that specific strategies might have on student learning (Boulton-Lewis, 1994; Pressley, et al., 1990; Wilson, 1988). If teachers are not able to model the use of appropriate learning and affective skills and strategies, they will not be fulfilling an essential part of their professional roles. Furthermore, if teachers are not flexible, metacognitively aware and reflective learners they will experience difficulty in keeping up with the rapidly expanding knowledge base in their complex and ever changing work environments (McCombs, 1991; Vermunt, 1996).

In light of the above, it is important that prospective teachers possess appropriate knowledge about and use of, learning skills and strategies. Jones, Slate and Kyle (1992) report, however, that as recently as 1992, there were no published studies identifying the extent to which Education students employed effective note-taking, studying, and test-taking behaviours – all important learning strategies. They argue that research is needed to identify specific areas of weakness so that prospective teachers can be helped to develop better academic skills in order to become better learners. Only then will they be able to help their own students develop better academic skills. The present study specifically explored Education students' use of learning strategies, their feelings about the effectiveness of their strategies, their beliefs about the origins of the strategies they used, and their reactions to an in-context learning support program.

Learning strategy instruction

In terms of teaching learning strategies, the evidence overwhelmingly favours the conclusion that many strategies which improve academic performance can be taught to students (Borkowski, Carr, Rellinger, & Pressley, 1990; McKeachie, et al., 1986). Janssen (1996) believes that most students, with some advice or support from their instructors, can become the deep learners demanded by higher education and that by encouraging and developing students' metacognitive skills specifically, they will not only learn and understand the subject more effectively, but will also develop a greater understanding of themselves as learners. Overall, therefore, assisting students to develop their repertoire of learning strategies encourages them to become active players in the educational process and activates the passive learner by "...making conscious and more mature those skills that were previously unconscious and ill developed" (Miles, 1988, p. 334).

Such learning support is rarely given (Applebee, 1986; Durkin, 1979; Goodlad, 1984; May, 1986; Moely, Hart, Santulli, Leal, Johnson, Rao, et al., 1986; Schneider & Pressley, 1989) despite many students needing it (Martin & Ramsden, 1987). For example, results of a study conducted by Clements (1992) at Curtin reported that a great many students experience some degree of difficulty with their studies, with most difficulties encountered in the areas of study methods and planning. A survey of a sample of first year university students at Canterbury University in New Zealand found that at entry, students were lacking in intrinsic motivation and only half reported using good study habits (Educational Research Advisory Unit, 1990). In addition, Knapp and Karabenick (1988) found that almost all of the students in a study conducted at a university in Michigan in the USA, reported that they would have appreciated assistance with their courses or study skills during a typical term. A recent report on students entering higher education in Australia emphasised that first year students, because of their previous educational experiences, had a variety of characteristics and needs which affected their learning. The report found that school leavers beginning university study, in contrast to when studying at school, often experienced amongst other things, "...a comparatively impersonal environment in

which they are expected to be fully responsible for their own behaviour and development" and "...difficulty in maintaining motivation to learn without the structures imposed in the secondary system..." (Higher Education Council & Glassick, 1997, p. 9). Further, institutions in both the USA and Japan are currently experiencing difficulties with underprepared first year students who require extensive support in the areas of writing and mathematics (Higher Education Council & Glassick, 1997).

Academic studying can be characterised as an isolated and individual activity that takes place in a relatively ill-defined environment in which students are rarely given either directions for, or instruction in, what or how to study (Pressley, et al., 1990; Tait & Entwistle, 1996). Thus, self-initiated, self-defined and self-regulated effort is required (Thomas & Rohwer, 1986). As Weinstein points out,

> Autonomous learners need the strategies required for effective management of learning. Without them students cannot take responsibility for their own learning or their role in the teaching-learning act.
>
> (Weinstein, 1987, p 595)

If it is agreed that helping students to accept more responsibility for their own learning is an important educational goal, then helping them develop the competencies and attitudes needed for self-directed learning is imperative (Weinstein, 1987). Indeed, McKeachie, Pintrich, Lin and Smith (1986) state that,

> ...every course should help students become aware of strategies for learning and problem solving. An explicit goal of education throughout the curriculum should be to facilitate the development both of learning strategies and problem solving skills and of effective strategies for their use.
>
> (McKeachie, Pintrich, Lin & Smith, 1986, p. 1)

The current situation in universities, however, is that many students see academic tasks as hurdles to jump, rather than as activities which help them to learn (Biggs & Moore, 1993). To change students' approaches to learning it is, thus, necessary to help them develop more sophisticated conceptions of learning. (Ramsden, Beswick, & Bowden, 1986). The challenge, therefore, is to make the classroom a place where, if they are to prosper, students must learn to reflect on their learning and to come to understand what being an effective learner means (Biggs & Moore, 1993; Clarke,

1995). This is the perspective that underpinned the provision of learning support in the present study.

In light of the above, attempts to assist students to be effective learners should be encouraged. However, while researchers are calling for carefully evaluated in-context learning interventions, not many have been conducted (Boulton-Lewis, et al., 1996; Hadwin & Winne, 1996; Hattie, Biggs, & Purdie, 1996; Murray-Harvey, 1996; Volet, 1991). Of those that have been, only a small number have been successful in developing students' repertoire of learning strategies and metacognitive skills. These have focussed on implementing strategies in the context of students' disciplinary learning (Alderman, Klein, Seeley, & Sanders, 1993; Dart & Clarke, 1991; Fuller, Chalmers, & Kirkpatrick, 1994; Volet, 1991; Weinstein, 1987). Weinstein (1987) refers to providing learning support in-context as implementing a metacurriculum which involves the teaching of learning strategies while teaching the content area of the discipline. Contrary to many instructors' opinions, she believes that instructors have many opportunities to teach learning competencies while simultaneously teaching the knowledge, skills, and attitudes related to the content areas. Biggs (1987) believes that effective strategy instruction requires instructors to teach metacognitively, that is to provide students with appropriate information on when, where and why they should learn and use the strategies being taught. Based on a compilation of research findings, Radloff and Samson (1990) suggest that learning support programs which have been shown to assist student learning have been based on the principles of effective instruction, including:

- students as informed learners;
- students actively involved;
- instructor as a model and scaffold;
- emphasis on cooperation;
- content and activities relevant to student needs; and
- personalised instruction recognising students' prior knowledge and experience.

The present study incorporated these principles in the design of the year long in-context learning support program which is described in detail in Chapters 3.

Current in-context strategy instruction is based on research findings that suggest that students' use of learning strategies can vary in different situations (McKeachie, et al., 1986; Ramsden, Martin, & Bowden, 1989). The research literature also suggests that the context of teaching learning strategies interacts with students' characteristics. This interaction affects adoption of strategies and subsequent learning and academic performance. The specific interactions between learner and learning context, however, need to be further elucidated, specifically in real-life learning settings where motivational and contextual factors interact with cognitive issues (Pintrich & De Groot, 1990; Ramsden, 1987; Vermunt, 1996; Volet, 1991). Pintrich and De Groot (1990, p. 38) state that research which identifies "...relationships between student academic performance and student motivational orientation and self-regulated learning as well as social cognitive and knowledge factors in different classroom contexts" is needed. Furthermore, while cognitive psychologists have explored the influence of task characteristics on student learning in experimental studies, little ecologically valid research has been undertaken in postsecondary settings, especially with respect to the cognitive strategies learners use when completing set tasks (McKeachie, et al., 1987; Pintrich, 1989; Scouller, 1998). Scouller (1998, p. 454) notes that "comparative studies investigating whether students prepare differently if they are expecting different forms of assessment procedures are relatively rare". In addition, few studies have investigated whether students have integrated the new techniques into their personal study methods. Kaldeway and Korthagen (1995) suggest that what is lacking is research that combines training in study strategies, the impact this training has on students' study methods, and their learning outcomes. The issues identified above were addressed in the present study which examined students' learning strategy use and their feelings and beliefs when completing set tasks specifically short answer tests, essays and multiple choice examinations, in two different contexts – the presence and absence of explicit learning support.

Current literature suggests that student learning can be improved if a good affective and cognitive climate for learning is created (Biggs, 1995; Jegede, Alaiyemola, & Okebukola, 1991; McCombs & Marzano, 1990; Morgan, 1995; Thomas, 1988). Learning support programs that stress affective factors may have potential to support

the reduction of anxiety, thereby freeing mental energy to be focused on effective learning. Nicoll (1993) suggests that feelings must be acknowledged and allowed their space in a person's reality during learning. However, the specific role of affect (that is student beliefs and feelings about themselves as learners and about learning) as a major influence on learning and academic outcomes is an area that has not been well researched (Garcia & Pintrich, 1994; McCombs & Marzano, 1990; Nist, Simpson, Olejnik, & Mealey, 1991; Volet, 1991). The role of affect in learning and academic performance is specifically explored in the present study.

Overall, many questions regarding the amount of teaching needed, the specific types of learning strategies that should be taught, and the length and timing of learning support programs to be successful, still need exploring (Kirkpatrick, Chalmers, & Fuller, 1993; McKeachie, 1988). As Kirkpatrick, Chalmers and Fuller (1993) note,

> ...there has been little comprehensive longitudinal research into the factors that affect the success of programs designed to teach learning strategies and little systematic examination of the most appropriate length and timing of these programs.
>
> (Kirkpatrick, Chalmers & Fuller, 1993, p. 252)

In the present study, the issue of length was addressed by providing learning support for a whole academic year, that is for two semesters. The issue of timing was addressed by implementing again in Semester 2 (with a different group of students) the learning support program implemented in Semester 1.

Learning support programs are often aimed at "at risk" students or are seen as remedial (Alderman, et al., 1993; Hattie, et al., 1996). However, all students can benefit from learning support and for reasons pertaining to fairness and equity, all students should be assisted in their endeavours to understand the material presented. It is, therefore, vital that there be greater understanding of student learning and the outcomes of attempts to assist students to become effective learners in classroom settings, as undertaken in the present study.

In summary, in this section, the characteristics of effective learners have been described, the reasons why many students need learning support discussed, the principles that underlie effective learning support outlined, and some of the still unanswered questions about learning support, raised. In the next section, the educational research issues pertaining to the provision of learning support are discussed.

Educational research issues

Higher education is currently characterised by increased enrolments and greater student diversity. Universities are having to meet the needs of students from diverse backgrounds, be more accountable to stakeholders, more productive, and achieve their goals with reduced resources. Therefore, there is a growing need for educational research, especially in higher education, to address local issues which are relevant to enhancing learning and teaching in individual institutions.

Over twenty years ago, Snow (1974) recommended conducting studies in natural settings, acknowledging human subjects as active learners, incorporating as many environmental variations into the research design as possible, and observing learner behaviour and the social context in which the research is being conducted. Traditionally, however, educational research has been concerned more with the theoretical and abstract rather than with the practical and applied. In fact, a large proportion of research in higher education has focussed on short term, discrete, artificial and out of context learning activities (Radloff, 1997). Zimmerman and Pons (1986) suggest that "relatively little attention has been devoted to students' use of learning strategies in naturalistic contexts" (p. 625). Much research has also used traditional experimental designs, characterised by the administration of a few treatment variables and the use of pretest-posttest measures with all other variables being controlled. Because "such studies intrinsically lack the genuine complexity and latitude students experience in actual university study" (Hadwin & Winne, 1996, p. 9), some educational researchers have criticised them for their artificiality and lack of generalisability to practical settings (Borg & Gall, 1989; Miles, 1988). Pintrich and de

Groot (1990) support this view and state that "clearly, more ecologically valid classroom research is needed..." (p. 38).

Another important issue in higher education research is acting on and applying research findings in practice. This is one of the most difficult aspects of educational research, because very often techniques that are effective in experimental settings are not effective when used in practice. Further, researchers know that often the "leap between research and practice is a large one" (McKeachie, et al., 1986, p. 31). Arguably, conducting research in naturalistic settings is one way to close the gap between research and practice, because undertaking research in naturalistic settings allows "for examination of real learning in real time...takes account of the complexity of learning and acknowledges the importance of context" and enables the collection of data which can be interpreted "without the need for a conceptual leap from the laboratory to the 'real world' of learning" (Radloff, 1997, p. 16).

Longitudinal rather than short term studies are also needed. As noted by Pintrich (1994) in his paper on the future directions for research in educational psychology, what is needed are "more longitudinal studies using both traditional quantitative methods and qualitative methods, such as case studies and ethnographies, that focus on intraindividual development over longer periods, such as over a semester, a year, or several years of schooling" (p. 142). Similarly, Garcia and Pintrich (1994) and Schunk and Zimmerman (1994) point to the need for longitudinal studies, as do Weinstein, Hagen and Meyer (1992) who, like Pintrich, suggest also that research be conducted which includes a combination of quantitative and qualitative approaches. The present study recognised the importance of the naturalistic setting and the need to conduct longer term research using a combination of quantitative and qualitative methodologies and, therefore, incorporated these features into its design.

In relation to learning strategy research specifically, Pressley, Woloshyn, Lysynchuk, Martin, Wood and Willoughby (1990) report that very little research on what strategies are taught and how instructors teach them, has been conducted. Kirkpatrick, Fuller and Chalmers (1993) state that there is a notable omission of

research studies that describe the learning strategy programs developed by instructors, "particularly instruction that occurs in the context of subject instruction" (p. 2). Moreover, not one research study at university level has been located that formally includes the perspectives of the instructor implementing the program. In addition, few studies have directly sought students' opinions about the instructional strategies used. The work of Meece (1991) suggests that the instructional approach adopted by the instructor can have a significant influence on students' motivational patterns and that many descriptions of student motivation in the classroom have overlooked the important influence of the instructor's instructional approach. Miles (1988) observes that the instructor "seems strangely absent... faceless and voiceless" (p. 341) from the research on cognitive learning strategies. He argues, however, that research that focuses on only the students and/or the learning materials, and which fails to give serious attention to the instructor, is "uniformly incomplete, with a common missing dimension" and "falls short of the mark" (p. 342) in that its outcomes are of little practical use to university instructors. Pressley, Woloshyn, Lysynchuk, Martin, Wood and Willoughby (1990) believe that, while they have not been produced in the past, insights in the form of instructor commentaries are needed, because they may prove valuable to practitioners trying to translate strategy teaching into their own classrooms. Thus, conclusions drawn from strategy research which acknowledges the role of the instructor as an active and vital part of the teaching learning process – as the present study did – are more comprehensive and will make the research maximally relevant to practice (Miles, 1988).

Specific research in the areas of teaching of learning strategies and metacognitive processes is important for understanding how students learn how to learn and how students can be taught to improve their thought processes to facilitate learning and memory (Wittrock, 1986). According to Pressley, Woloshyn, Lysynchuk, Martin, Wood and Willoughby (1990), there is a need for richer descriptions of strategy instructional effects than is reported in most studies. Moreover, they believe that qualitative descriptions of students' learning and instructors' teaching of strategies in actual classrooms are needed and that "a lot remains to be discovered about the hassles and joys of teaching and learning strategies..." (p. 47). They suggest,

therefore, that describing the implementation and evaluation of specific learning strategy instruction attempts in discipline content areas by instructors and learners at universities, is needed. The present study responded to this need by including both student and teacher perspectives on the learning support provided.

Focus of present study

The above discussion has shown that all students and especially those who will have to teach others, need to be effective learners. However, many students coming to university, including Education students who generally have low entry scores, are not well prepared for the demands of university study and thus need help to be effective learners. In terms of providing learning support, much research has been conducted on teaching students discrete study tactics or strategies, with such programs often implemented out of context under laboratory or experimental conditions. Furthermore, the focus in such research has traditionally been on the cognitive domain and not on the metacognitive, motivational or affective domains and their relationship to academic performance. Finally, more research is needed which elucidates the impact of providing learning support on student study behaviour, student perceptions of what strategies support their learning and on the length and timing of support for maximal effect.

In terms of educational research in higher education, there is a lack of research conducted in naturalistic settings and over extended periods of time using a combination of quantitative and qualitative methods. Furthermore, in terms of learning strategy research specifically, research studies have not focussed on the instructor and, therefore, very little is known about what strategies are taught and how instructors teach them. In addition, little research seeking students' perspectives on their learning (specifically factors which affect their learning) and in the discipline within which it occurs, has been conducted.

The present study attempted to address the abovementioned issues, namely a need to provide learning support in context, specifically to investigate the role of motivation,

metacognition and affect in learning, and to adopt a holistic view of student learning support. It addressed the need to conduct more naturalistic studies on learning strategy instruction that can inform educational practice by investigating how an instructor can assist first year university students to be effective learners in the context of their everyday learning in a subject discipline. To this end, a learning support program aimed at assisting students to be effective learners was designed, implemented and evaluated. In order to investigate the length and timing of the program, it was implemented across two semesters. Further, when evaluating the program specific attention was paid to including multiple sources of data and to gathering data which included both the students' and the instructor's perspectives.

The research questions identified in the present study and the methodology used to address them, are presented in the sections that follow.

Research questions and summary of methodology

The following research questions were addressed in the present study.

1. How does current research and theory inform the design and implementation of learning strategy support programs?

2. What strategies, based on current literature and past practices, are appropriate for enhancing first year students' learning, so that they become more effective learners?

3. Does providing in-context learning support enhance student learning in an Educational Psychology course in terms of:

   a) the learning strategies students use, their feelings about the effectiveness of their strategies, and their beliefs about the origins of their strategies;
   b) students' motivational orientations;
   c) students' affect, specifically students' anxiety, confidence, worry and discomfort; and
   d) students' academic performance.

4. What are the students' and instructor's perceptions and feelings as they engage in a learning support program?

5. From the students' perspective, which aspects of the instructional context, specifically instructional style and instructional strategies, facilitate their learning?

6. What is the most appropriate length and timing for a program designed to enhance first year students' learning?

7. Is there a relationship between learning behaviour and academic performance?

In order to address the research questions, a number of different research methods were employed. It was anticipated that by using a combination of qualitative and quantitative methods, a richer data base would be developed leading to a better understanding of the issues.

First year students enrolled in a Bachelor of Arts teaching course in the Faculty of Education participated in the study. Learning support was provided and evaluated in two core Educational Psychology courses over one academic year. Thus, the design involved a longitudinal and cross-sectional study of first year university learners in a naturalistic setting.

At all stages of the study, steps were taken to ensure that the research was conducted in an ethical manner. Participation in the study was voluntary and students had the right to refuse participation, without penalty. Participants were informed that all responses to questionnaires, interview questions and classroom observations were confidential and that anonymity was assured. Every effort was made to ensure that any data collection method was as unobtrusive as possible. Use of the data collected was made only with students' consent and feedback to participants was ensured.

The study was divided into five phases as illustrated in Figure 1.1:

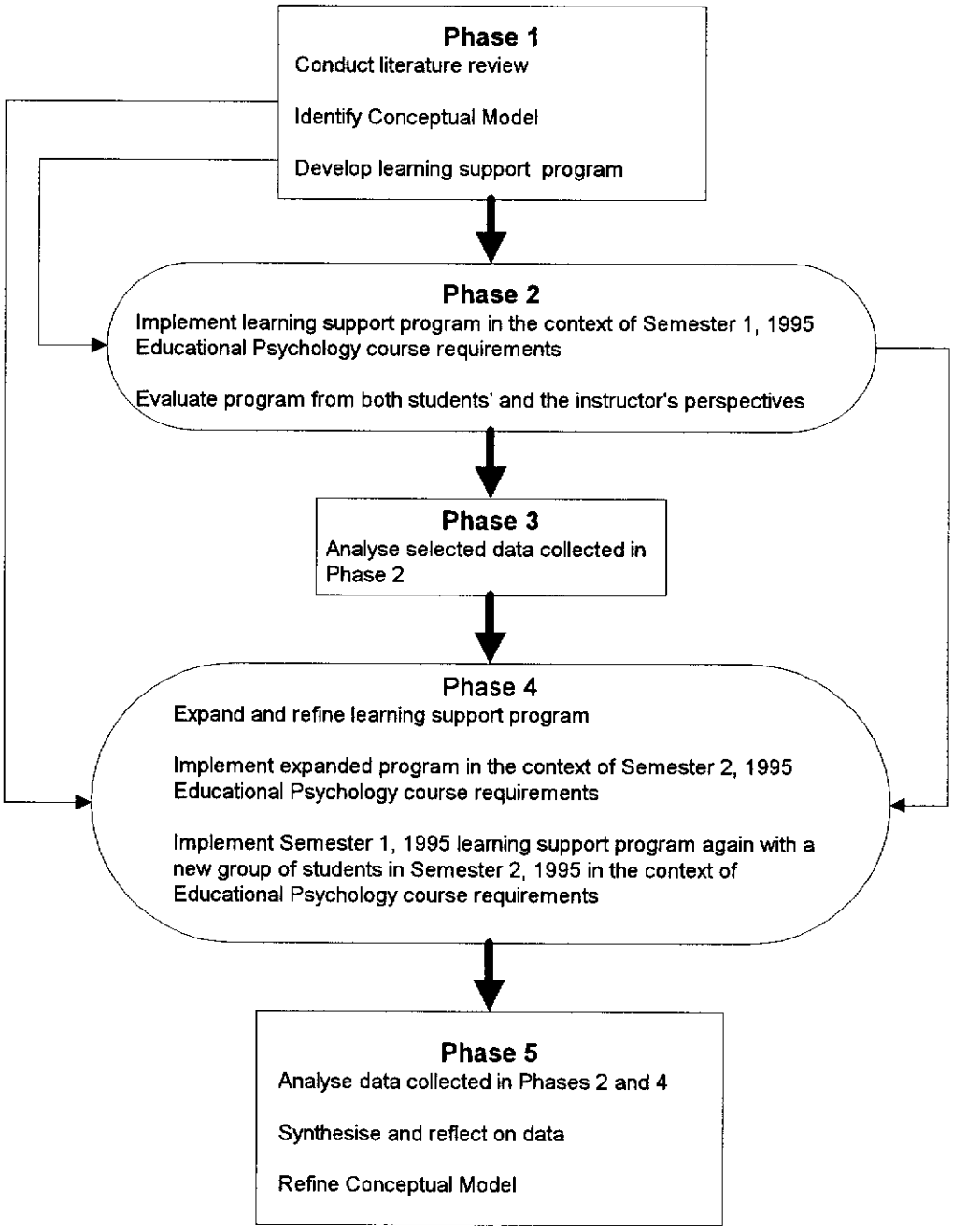


Figure 1.1 Outline of the five phases of the study.

Phase 1

Phase 1 of the study involved conducting a literature review, the identification of a conceptual model of student learning which took account of students' cognition, metacognition, motivation and affect, and the design of a learning support program based on the integration of cognitive, behavioural and social learning perspectives.

Phase 2

Phase 2 of the study focused on implementing and evaluating the learning support program in Semester 1, 1995. The program was implemented by the researcher with student volunteers in two classes ($n = 47$) studying Educational Psychology. The program was explained fully so that all participants understood the procedures, the learning support provided and their own role. Specific learning support strategies were fully integrated into the students' regular study program over a semester of study.

During this phase, a quasi-experimental research design was employed. To this end, pre and post questionnaires were administered to gather data on students' learning strategies and motivation (Pintrich, et al., 1991) and affect (Spielberger, 1983). To obtain comparative data, all first year students ($N = 152$) enrolled in Educational Psychology completed the pre-post questionnaires.

Student feedback regarding preference for and perceptions of the learning strategies and their use were also obtained. A questionnaire containing both open-ended and closed items was administered to the students in the learning support program. Specific attention was paid to gathering data on student affect and, to this end, an open-ended questionnaire developed by the researcher and an affective checklist (Docking & Thornton, 1979; Zuckerman, 1960), were used.

Based on classroom interaction and questionnaire responses, a group of students was selected for interview at the end of Semester 1. The purpose of the interviews was to obtain detailed descriptions of the strategies students purported to use, and their feelings about their strategy use, and to obtain their perspectives on learning strategy instruction. To obtain comparative data, a group of students participating in the same course and who had not participated in the learning support program were also interviewed at the end of the semester.

To gain an insight from the instructor's perspective into the issues which arose when implementing the learning support program, a Reflective Diary documenting the

implementation of and reflection on the program was kept by the instructor / researcher. The Diary served as a rich source of description of strategy instruction and of the instructor's reflections as the program was implemented.

Phase 3

During Phase 3, data from Phase 2 were analysed. Quantitative data were analysed using standard statistical procedures. Qualitative data were analysed using the computer software package, NUD•IST, Non-numerical Unstructured Data Indexing, Searching and Theorising, (NUD•IST, 1994). This package has been especially developed for qualitative data analysis and allows researchers to analyse unstructured data according the their own theoretical and methodological needs. Specifically, NUD•IST offered a powerful method for systematically organising and relating concepts, objects, thoughts and other types of topics. NUD•IST facilitated the researcher's task of finding and exploring categories and patterns of categories in interview data. Using NUD•IST allowed both sophisticated and subtle analyses to be performed and in this way provided insights into complicated issues (Richards & Richards, 1995a; Richards & Richards, 1995b).

Phase 4

During Phase 4, the learning support program was expanded and further refined, based on both the results of the analysis in Phase 3 and further effective instructional practices identified in the literature. A class (n = 24) comprising mainly students who had participated in the learning support program in Semester 1, 1995 was maintained in Semester 2, 1995. The expanded learning support program was implemented in this class. In addition, a class of students (n = 25), the majority of whom had not participated in the Semester 1 learning support program, was recruited into the study. The original learning support program, implemented in Semester 1, 1995 was implemented with this class in Semester 2, 1995, in order to gain information on the appropriateness and timing of learning support provision. Selected students from both classes were again interviewed at the end of Semester 2, 1995. Again, as in Phase 2, to obtain comparative data, a group of students who had not participated in the learning support programs was also interviewed.

Data on the design, implementation and evaluation of the learning support programs were gathered and comparisons between the programs were made.

Phase 5

During Phase 5, data were analysed and the analyses synthesised and considered in light of the Conceptual Model underpinning the study. The Conceptual Model of learning integrating cognition, metacognition, motivation, and affect in a specific teaching and learning context was considered and its use in the present study, articulated. The implications of providing learning support based on an integration of cognitive, behavioural and social learning perspectives, were also considered.

The methodology outlined above, which involved the combination of findings from questionnaires with those from rigorous qualitative analyses of interviews ensured that conclusions were soundly based on multiple methods and complementary research approaches (Entwistle & Entwistle, 1991).

Significance of study

The present study has significance for all those involved in teaching first year university students, because it contributes to knowledge of how to assist students acquire discipline-specific learning skills, and guides practice and further educational research in the area of student learning. The present study is important in that it takes a holistic look at the implementation of learning strategies in regular classrooms. It takes the perspectives of both the instructor and student and attempts to identify factors which will assist in the implementation of in-context learning strategies. The study examined many aspects of the implementation of a learning support program and, therefore, has practical significance for instructors and institutions involved in this process.

The study responds to the call by current educational researchers (Garcia & Pintrich, 1994; Hadwin & Winne, 1996; Pintrich, 1994; Pintrich & De Groot, 1990; Weinstein,

et al., 1992) for more ecologically valid research which involves naturalistic approaches and longitudinal designs and which uses both quantitative and qualitative methodologies.

It is well timed, coinciding with changes in university student cohorts and their associated learning needs (Clements, 1992; McInnis, James & McNaught 1995; McKeachie, 1988; Weinstein, Zimmerman & Palmer, 1988). At Curtin University of Technology entrance score cut-offs have reached an all time low in certain areas (for example Education) and thus the issue of teaching under-prepared students must be addressed (Samson, 1996).

The study specifically explores the role of affect as a major influence on effective learning and educational outcomes, an area that has not been well researched. The implications of better understanding of the relationship between affect and learning are great because they may inform any attempts at curriculum and instructional reform (McLeod, 1992; Vermunt, 1996).

The study will add to the body of knowledge on strategy instruction and student learning because little is known about instructor or student reactions to strategy instruction as it is implemented. There is a need for additional research about what and how strategies are taught in classrooms and there is value in exploring the outcomes of learning support programs implemented in regular classroom settings (Pressley, et al., 1990). The findings of the present study will give weight to the argument for change to the teaching and counselling approaches adopted by many universities, both in Australia and elsewhere.

The Conceptual Model of student learning developed in this study and which takes account of students' cognition, metacognition, motivation and affect, and of the teaching and learning context, will add to the understanding of student learning. Understanding effective student learning has important implications for university teaching practice. Morgan (1995) states that, to improve student learning, we need models of learners which mirror their realities and experiences of studying and

change. Research which aims to describe students' realities of studying can provide the basis for theorising practice and subsequently lead to change in practice. According to Thomas and Rohwer (1986), although the area of student learning has begun to attract considerable research efforts, its complexity and elusiveness requires that research efforts be enlarged and extended over the long term. The present study forms part of the enlarging and expanding of the much needed research effort.

Overview of thesis

This thesis consists of seven chapters. This chapter has stated the objectives of the research study, outlined a background and rationale for the study which highlighted research issues relevant to the study, and presented the specific focus of the study. The seven research questions which guided the study were outlined and a brief overview of the research methodology employed to address them, was provided. The study's significance and an overview of the thesis concluded the chapter.

Chapter 2 includes a critical review of the research literature related to the research questions identified. The chapter explores the concepts of student learning and teaching at university and discusses some of the problems identified in the research literature. The lack of in-context, ecologically valid research in the area of student learning at university and the need to address the role of affect in learning, are specifically addressed. An overview of the research literature on the design and implementation of learning support programs is provided. In addition, an overview of the instruments available to measure student learning and the rationale for the selection of the instruments used in the present study, are also provided. Research Question 1 is, therefore, addressed in this chapter. The chapter concludes with an outline of the Conceptual Model underpinning the study.

Chapter 3 describes the methodology used in the study. As already outlined, the study involved five phases of implementation. In Chapter 3, the in-context learning support program designed in Phase 1 and implemented and evaluated in Phase 2 of the study, is described. Phase 3 of the study, in which the data collected in Phase 2 of the study

was analysed is then outlined. This is followed by a description of Phase 4 of the study in which the learning support program designed in Phase 1 was expanded and then implemented and evaluated. Thus, Research Question 2 is addressed as part of the description of the design of the learning support programs. The chapter concludes with an outline of Phase 5 of the study in which the data collected were analysed, synthesised and reflected on.

Chapters 4 and 5 present the results and interpretation of the data collected in Phase 2 and Phase 4 of the study, respectively and, therefore, address the remaining research questions.

Chapter 6 presents a general discussion of the results described in Chapters 4 and 5 in terms of the Conceptual Model, their implications for first year student learning generally and for providing in-context learning support, specifically.

Chapter 7 includes an outline of the study's significance and limitations, recommendations for strategy instruction at university, suggestions for future research and a summary of the study.

Overall, therefore, the study included reviewing current literature on student learning, designing, implementing and evaluating a learning support program, and synthesising the data collected from students and the instructor in order to expand current theoretical and practical understanding of first year student learning at university.

Chapter 2

Literature Review

Teaching and learning at university
- Defining approaches and conceptions of learning
- The role of the learning context
- Encouraging appropriate learning conceptions and approaches

Defining, developing and measuring learning strategies
- Learning strategies defined
- Developing students' learning strategies
- Research studies relevant to this study
- Measuring and assessing students' learning strategies

Conceptual framework
- Description and rationale
- Domains of the Model
- The Model and this study

This chapter begins with an overview of the literature on teaching and learning at university. In this overview, students' approaches to and conceptions of, learning are defined and discussed. The role of the context in student learning and how to encourage appropriate conceptions and approaches to learning, are specifically outlined. How the present study responded to critical issues identified in the literature is also highlighted. The main issues and problems found in the literature with regard to defining, developing and measuring students' learning strategies are then discussed in relation to the present study's aim of furthering current theoretical and practical understanding of student learning at university level by investigating ways of helping first year university students to be effective learners. Following this discussion, the conceptual framework which influenced and shaped both the philosophy and the approach adopted in the present study, is presented. Specifically, the Conceptual Model underpinning the present study is described and the rationale for its use, presented. The domains of the Model and their relationship to the present study are outlined. How the Model was re-conceptualised for use in the present study in light of current literature, concludes the chapter. This chapter, therefore, sets the scene for the

directions of the study, and underpins the research questions posed and the approach adopted to address them.

Teaching and learning at university

In relation to teaching and learning at university, students' approaches to, and conceptions of, learning, the role of the learning context in student learning, and encouraging appropriate conceptions and approaches to learning, are discussed in the sections that follow.

Defining approaches and conceptions of learning

Research on student learning at university has identified important differences in the ways in which students learn and study. One of the most important distinctions involves the conceptions of learning held by students and the approaches they adopt when carrying out learning tasks (Marton & Saljo, 1984). Marton and Saljo (1984) have identified five conceptions of learning and categorised them as either quantitative or reproducing, or qualitative or transforming. The categories were refined by Van Rossum (1985), and a sixth category added by Marton, Dall'Alba and Beaty (1993). In terms of the most current categorisation of students' learning conceptions, conceptions are considered to be quantitative or reproducing when students believe that learning means increasing their knowledge, memorising and reproducing what they have learnt, or applying facts and procedures. Students' conceptions are classified as qualitative or transformational when they describe learning in terms of understanding, seeing what is learnt in a different way, or changing as a person.

Learning approaches refer to the ways in which students go about their academic tasks. Previous research has identified four approaches to learning, namely, "deep", "surface" (Marton & Saljo, 1976), "achieving" (Biggs, 1979) or "strategic" (Entwistle & Ramsden, 1983), and "apathetic" (Entwistle & Ramsden, 1983). The learning behaviours associated with each approach described below represent a synthesis of

previous research (Biggs, 1995; Entwistle & Tait, 1993; Tait & Entwistle, 1996; Trigwell & Prosser, 1991a):

- when adopting a "deep" approach, students attempt to understand and to determine the meaning of the material they are studying; they take nothing as given and question themselves and the material; they try to see connections between previously learned and current material, to relate new ideas to real life, to integrate the material into the subject as a whole and to see the task in a wider perspective; they relate evidence to conclusions and examine the logic of arguments presented;

- when adopting a "surface" approach, students concentrate on memorising and reproducing the material; they do not think about the implications of what they are learning or have learned indicating an unreflective or passive approach to the task; they focus on assessment requirements and fail to distinguish between guiding principles or patterns and are often driven by a fear of failure;

- when adopting an "achieving" or "strategic" approach, students focus on strategies that will assist them to achieve high grades; they focus on organising their time, seeking cues, systematically using study skills, planning ahead, allocating time according to the task's importance and relating studying to assessment requirements; and

- when adopting an "apathetic" approach, students appear to lack direction; they do not use effective time management strategies; their study activities are disorganised; they lack interest and adopt cynical and disenchanted attitudes towards studying.

The four approaches are "relational" in that they describe the quality of the learner's engagement with the learning task and not the individual characteristics of the learner (Ramsden, et al., 1989).

Conceptions of learning and approaches to learning appear to be related. Quantitative or reproducing learning conceptions underlie a surface approach, while qualitative or transforming conceptions underlie a deep approach (Gibbs, 1984; van Rossum & Schenk, 1984). In terms of learning outcomes, students who adopt a deep approach develop highly structured and appropriate learning outcomes. In contrast, the outcomes of surface learning are seen as less valuable because an understanding of the "big picture" is lost as a result of the learner's narrow focus on learning discrete details only. Achieving approaches are associated with learning outcomes that result in high marks. Comparing the learning strategies used by learners adopting a deep or achieving approach shows that deep strategies relate to learning the content while achieving strategies relate to managing the context. However, when the strategies are used in combination, they form the deep-achieving approach considered most effective for successful learning (Biggs, 1987; Biggs, 1995; Tait & Entwistle, 1996). In terms of student motivation, there is evidence that a deep approach is related to intrinsic motivation and a surface approach to extrinsic motivation (Gow & Kember, 1990). Thus, in contrast to students who hold qualitative conceptions of learning, students who hold quantitative conceptions tend to use lower level learning strategies, develop less sophisticated learning outcomes, are less motivated to learn, focus more on grades, rewards and approval from others, and are more likely to express negative attitudes about their learning (Beckwith, 1991; Biggs, 1987; Gow & Kember, 1990; Pintrich, 1989).

The role of the learning context

The important role which the context plays in student learning has been highlighted in recent years. Studies have demonstrated "that the approach taken to the learning task is influenced by, and is a response to, the student's perception of the context within which the learning task takes place" (Meyer & Muller, 1990 p. 132). Thus, the approach a student adopts varies as a function of both the individual learner characteristics and the perceived situational demands, that is, the context (Biggs, 1995; Boulton-Lewis, et al., 1996; Clarke, 1998; Gibbs, 1984; Gow & Kember, 1990; Ramsden, 1988; Ramsden, et al., 1989; Richardson, 1994). Studies by Entwistle and

Ramsden (1983) have provided evidence that different study orientations are associated with particular aspects of the learning context, including perceived freedom of choice in learning and good teaching leading to an adoption of a qualitative or transforming approach, and a heavy workload and lack of freedom leading to a quantitative or reproducing orientation.

The work of Gow and Kember (1990) provides further evidence of the relationship between students' approaches and contextual demands. They report that surface approaches were considered axiomatic with the nature of some subjects, with students in their study commenting as follows:

> "Besides anatomy ... if you do not memorise it there is nothing much to do." (Rehabilitation Sciences student)
>
> "Understand? I rather think there is not a lot to understand - mainly memorising. Memorising the terms, for example, What kind of injections, where to inject, the part of the body, the names ... you also have to know the process for doing it. And you have to memorise these." (Diagnostic science student)
>
> (Gow & Kember, 1990, p. 318)

Workload has also been found to be associated with the approaches students adopted when studying. Heavy workload is associated with surface learning and study behaviour. The overwhelming effect of information overload on the way students studied results in study behaviour which Gow and Kember (1990, p. 317) have termed the "swot, pass and forget syndrome". Other researchers have also found that if the workload and coverage of content is so excessive that it does not provide time for understanding and reflection, it mitigates deep learning (Biggs, 1995; Fox & Radloff, 1996; Gardner, 1993).

Instructional style also influences students' approaches to learning. At university, instructional style is mainly characterised by instructors focusing on transmitting information to students (Barr & Tagg, 1995). There is a perception that the instructor's "task is to know the subject and expound it clearly", while the student's task is to receive it accurately (Biggs, 1995, p. 7). Thus, students often find university

teaching to be didactic. The influence of instructional style on the approaches students adopt is illustrated by the following student comments:

> "I copy because I don't even understand what the main points are ...The other students do the same thing because the subject is taught very quickly.. There's no time to think. ... If you listen, there's no time to copy. If you copy, you don't hear much." (Diagnostic Sciences student)
>
> "We copy from the overhead projector non-stop. The lecturer does not give us handouts. In class, it's only very brief, very surface, superficial. It's like sticking stuff into your head or on your skin." (Accountancy students)
>
> (Gow & Kember, 1990, p. 318)

Assessment also influences the learning approach students adopt (Biggs, 1995). Biggs suggests that if the assessment tasks are not aligned with the learning objectives, students will respond at the level of the assessment tasks. Thus, if the assessment tasks assess at a lower level than is nominated in the learning objectives, students will be encouraged to adopt surface approaches. A study by Entwistle and Entwistle (1991) found that traditional university degree examinations did not consistently test deep, conceptual understanding. They also reported that students appeared to gear their revision to question types which could be answered within frameworks provided by the lecture or a textbook, and that the type of questions set had a strong influence on the forms of understanding students sought when revising and studying. Other research suggests a strong association between multiple choice question examinations and students' use of surface study strategies (Ramsden, 1988; Watkins, 1982). More recent research, however, appears to contradict the finding that students employ surface strategies when preparing for multiple choice examinations (Scouller & Prosser, 1994). Scouller and Prosser (1994) have found that, regardless of the type of examination questions set, and despite research on assessment using multiple choice examinations revealing a shift towards the use of reproduction and recall as learning strategies (Entwistle & Tait, 1990), students with deep and achieving learning orientations intended to use deep learning strategies when learning for their examinations, while those with surface orientations appeared to have no planned strategies for preparing for their examinations. Furthermore, those who had a surface orientation appeared to be confused, were passive and unreflective about their studies. Thus, in view of these contradictions in the literature, it seems that the relationship

between students' study strategy use and mode of assessment being used, needs further exploration. The present study specifically explored this relationship by examining the strategies students purport to use when studying for tests and examinations, and when completing writing tasks.

The classroom and institutional climate can also influence students' approaches to learning. Entwistle and Ramsden (1983) found that the instructor's attitude to teaching influenced students' study approaches, with commitment to teaching, positive relationships with students, and a degree of freedom in learning being the most important for fostering deep approaches. Biggs (1995) suggests that positive learning environments that operate on the principles of trust, freedom and responsibility, as well as being free from bureaucratisation, encourage deep learning. On the other hand, affectively negative environments generate feelings which distract from effective learning. For example, students exhibit anxiety and cynicism if the learning environment is characterised by the use of intimidation, sarcasm, threats of failure, or heavy use of sanctions. Furthermore, refusing to accept student criticisms or suggestions as to content or instructional methods, assessing for trivial content, not practising what is preached and rigidly adhering to deadlines (which suggests that punctuality is more important than quality), all lead to poor learning outcomes and surface approaches to learning. Thus, affective issues play a role in determining not only what is learned, but also how well it is learned (Biggs, 1995). The present study specifically explored the role of affect in student learning and academic performance.

Academic involvement

Students' academic involvement in learning is also influenced by contextual factors (Willis, 1993). According to Willis (1993, p.134), academic involvement "is portrayed as a mixture of affective experience, learning outcomes and classroom interaction". Factors identified which influence student academic involvement were instructors' attitudes to their subjects and students, tutor personality and learning climate, and course content and assessment. Positive instructor attitudes were related to greater academic involvement. Specifically, instructors who demonstrated personal interest in

and enthusiasm for what they were teaching, as well as showing respect for students and their ideas, increased students' academic involvement. Instructor personality and ability to create a supportive climate were significant factors in encouraging students' involvement. Course content was not found to be as significant as instructor attitude in encouraging involvement. However, content that was either personally relevant or relevant to students' vocations and provided scope to develop personal interests and engage in in-depth study, promoted involvement. Large classes, preoccupation with grades and examinations, and inconsistent marking all hindered involvement. An important research finding was that students' academic involvement could be either enhanced or changed depending on their perceptions of the above-mentioned course-related factors.

While research suggests that students' academic involvement in their learning can vary, and despite many researchers finding that involvement is linked to both the quality and quantity of learning outcomes, as well as to motivation and personal development, few studies have investigated the factors that lead to academic involvement from the students' perspectives (Willis, 1993). The studies that have been conducted, have generally focussed on time spent learning as the measure of involvement. More recent views propose that student-related and personal factors (prior learning, motivation, study skills and attitudes to any learning endeavour), as well as contextual factors, affect student involvement (Boulton-Lewis, 1994; Willis, 1993). Research conducted in New Zealand (Willis, 1993) has found that the personal factors identified by students as affecting their academic involvement included their existing interest in the subject (most significant reason) and positive feelings about the area of study. The present study acknowledges the lack of research which includes students' perspectives and therefore specifically explores, from the student's perspectives, which aspects of the instructional context, specifically instructional style and instructional strategies, facilitates their learning.

The generally accepted goals of higher education imply that students are expected to come to understand course content. However, instruction does not automatically lead to learning and the learning strategies that students use determine to a large extent the

quality of their learning outcomes (Martin & Ramsden, 1987; Vermunt, 1996; Wittrock, 1986). Arguably, therefore, and as suggested by Vermunt (1996), university teaching should be directed at encouraging students to use effective learning strategies. Thus, the role of instructors is to encourage students to use deep, yet strategic, approaches to their studying (Tait & Entwistle, 1996) and research on student learning should be directed at finding out from the students' perspective what role the instructor can play in supporting their learning (Vermunt, 1996) – as the present study did.

Encouraging appropriate conceptions and approaches

Educators are suggesting that university students should be challenged enough to develop their powers of independent reasoning and that instructors should be encouraged to assist students to develop an academic approach (characterised by interest and understanding) to their study (Gow & Kember, 1990). Further, instructors should be concerned with finding out how their students are conceptualising the course materials they are studying and then help them to modify any quantitative conceptions (Bowden, 1988). It is suggested also, that although students' learning at university often occurs in a far from ideal environment that encourages passivity, for example, that of attending lectures and increasingly larger tutorials, it is still possible to create a positive climate that encourages students' academic involvement and deep learning (Barr & Tagg, 1995; Clarke & Dart, 1994).

Based on a synthesis of the work of Angelo (1995), Boulton-Lewis (1996), Entwistle (1990) and Trigwell (1991a), the implications of research for university policy and practice are outlined below:

- Instructional style and presentation of course content can be improved if instructors are interested and enthusiastic about their subject, are well organised, give clear presentations, have high but realistic expectations, attempt curriculum innovations, help students connect new information with prior knowledge, and encourage students to organise material in meaningful ways.

- Instructional climates may be improved if instructors organise tutorials in ways that are informal and supportive, learn and use students' names, encourage students to ask questions, promote active learning, facilitate discussions and interaction, ensure students get to know one another and share ideas with peers, and seek student feedback on what helps and hinders their learning.

- The relevance of course content may be improved if examples that students are directly able to identify with are used, course content is linked to real situations, opportunities for students to engage in individual projects on topics of interest are provided, and students are given greater choices in what and how they learn.

- Assessment may be improved if it is directed to mastery of content and not dominated by a concern for grades, students are be able to learn from their mistakes in a non-threatening way that allows time for reflection, the course goals and assessment criteria are made explicit, assessment tasks are well timed so that students do not become overburdened with assignments, marking is consistent and is based on clearly stated criteria, and helpful and specific student feedback is provided.

In the present study, every attempt was made to incorporate the features outlined above in the design and implementation of the year long in-context support program.

As mentioned earlier, outcomes of current research have suggested that improvements to the quality of students' learning might be made by altering the context, or students' perceptions of the context, in which learning occurs (Entwistle & Waterston, 1988; Entwistle, 1993; Meyer & Muller, 1990; Ramsden, et al., 1989). However, knowing what factors in the context are associated with different students' approaches to learning and possibly even different learning outcomes, and then knowing how to alter the context in terms of the specific needs of the students, is not an easy task, and, as Meyer and Muller (1990) point out, any hypothesis "produces more questions than answers" (p132). According to Eklund-Myrskog (1996), more attention should be

given to the ways in which students conceive learning within each specific learning context, and to what they actually do in order to meet the demands of the context. While generalisations about student learning from specific disciplines or from university study as a whole, are an excellent starting point, Eklund-Myrskog believes they should be verified and contextualised for each academic discipline. The present study recognised the need to contextualise learning support and therefore focused on student learning in the context of a specific discipline namely, Educational Psychology.

Boulton-Lewis and her colleagues suggest that, if the effectiveness of university teaching and learning is to be improved, carefully researched interventions are needed which attempt to assist the majority of students and instructors to (if necessary) change the content and organisation of their knowledge about learning, and hence their approach to teaching (Boulton-Lewis, 1994; Boulton-Lewis, et al., 1996). Interventions should aim to assist students to change their beliefs about learning and about the factors that influence it, to develop a wider, better organised range of strategies for learning and to control these metacognitively, to realise that there is a hierarchical set of learning outcomes, and that, everything else being equal, qualitative outcomes are better. Boulton-Lewis and her colleagues speculate that the specific aspects of such interventions might include,

> ...situations that require students to increasingly take control of their own learning including reading, summarising, presenting and discussing material with peers, deciding what they want and need to learn, and then taking responsibility for searching the literature themselves. It would appear also that they need help in structuring the content of their learning...It would also be important to make students aware that they were to be assessed on the level of structure of their work, as well as the content.
>
> (Boulton-Lewis, Wilss & Mutch, 1996, p. 106)

To this end, Boulton-Lewis et al., believe that studies – like the present one – involving both direct and applied teaching about learning, are needed.

Defining, developing, measuring and assesing learning strategies

Research Question 1: *How does current research and theory inform the design and implementation of learning strategy support programs?* is addressed in the following sections. Firstly, in order to clarify the terminology used in this study, "learning strategies" are defined. Secondly, past and current trends in relation to developing students' study skills and learning strategies are discussed. Relevant university studies of learning support which is in context, subject-specific and implemented by the discipline instructor, are also described. Thirdly, a brief overview of the ways in which students' use of learning strategies have been measured and the selection of the instruments used in the present study, is provided.

Learning strategies defined

"Learning strategies are considered to be any behaviors or thoughts that facilitate encoding in such a way that knowledge integration and retrieval are enhanced" (Weinstein, 1988, p. 291). More specifically, these thoughts and behaviours constitute organised plans of action designed to achieve a goal (Anderson, Paris, Weinstein and Mayer cited by Weinstein, 1988). Thus, a strategy is considered to be the approach an individual adopts when undertaking a task and includes how he/she thinks and acts when planning, executing, and evaluating his/her performance on the task and its outcomes (Schumaker & Deschler, 1992). Learning tactics on the other hand, are the specific techniques that make up the plan ie they are the observable activities that imply certain strategies are in use (Derry cited by Schmeck, 1988).

A strategy is a sequence of activities rather than a single event, and is made up of component parts that are acquired, refined, and integrated into strategic wholes. This means, among other things, that learners need to acquire both the component processes and a routine for organising the processes. An important feature of a strategy, therefore, is that it is largely under the control of the learner. Paris, Lipson and Wixson (1983) suggest that for an activity to be considered a strategy, it must be

selected by a learner from alternative activities, intended to be used to attain a goal, in order to complete the task. Thus, while subroutines may be learned to a point of automaticity, strategies are generally deliberate, planned, and consciously engaged-in activities. Strategies can, therefore, be examined, reported and modified (Garner, 1988).

The effectiveness of a learning strategy is determined by the impact it has on learning, with more effective strategies being those that match the task and have the greatest impact on the learner's thought processes. For example, if the learning task required understanding, a learner underlining a passage in the text would be considered to be using a less effective strategy than if he/she summarised the passage in his/her own words (Schmeck, 1988). Thus, for learners, knowing which strategy to use and when, is as important as knowing how to use it (Garner, 1988).

In summary, a learning strategy is considered to be intentional and higher order, implying a complex fusion of intention and purpose which work together to produce a unified learning outcome, whereas a tactic is specific, algorithmic and makes up the procedure for handling a set task (Biggs, 1993; Schmeck, 1988).

Developing students' learning strategies

As Pintrich (1989) says, "The problem of how to teach students to become active, motivated and self-regulating learners is an old but continuing issue in education. Plato struggled with this problem in his effort to tutor the slave boy Meno" (p. 117). The problem is more relevant than ever before in current university contexts. Universities, which once rigorously screened and selectively admitted candidates from a narrow and privileged stratum of society, are now enrolling much greater numbers of students from diverse backgrounds (McKeachie, 1988). Therefore, many more students being admitted to university may be academically underprepared or disadvantaged (Weinstein, 1988) and, as a consequence, may experience problems with studying. Problems with studying may lead to personal unhappiness, withdrawal or academic failure. High levels of withdrawal and failure are especially prevalent

among students in their first year of university study (Tait & Entwistle, 1996). In order to respond to these issues, universities have recognised the need to provide educational support for students who might not previously have been admitted.

Current views suggest that the responsibility for student learning, involvement and academic performance is a shared one between instructors, the institution and the students (Martin & Ramsden, 1987; McInnis, et al., 1995; Pintrich & Johnson, 1990; Sharwood, 1996; Tait & Entwistle, 1996; Willis, 1993). In line with this belief in shared responsibility, universities have responded in a variety of ways to the need to assist students from diverse backgrounds to improve their learning (Hadwin & Winne, 1996). Responses have involved developing short courses to teach study skills, establishing learning resource centres, providing student counselling programs, and offering workshops or courses focusing on study skills (Hadwin & Winne, 1996; McInnis, et al., 1995; Weinstein, 1988).

Many of these approaches have been directed at students identified as "at risk" because of their previous educational background and experiences (Hofmeyer & R., 1989). Hattie, Biggs and Purdie (1996) believe, however, that the goal of improving learning is less likely to be achieved by targeting the individual in terms of a deficit model, which presupposes that he/she is lacking the right strategies and needs to be taught them or, at worst, is using the wrong strategies and needs to have them changed. Furthermore, Parsons and Meyer (1990) state that, given the amount of time and effort required to develop such programs and the dedication, enthusiasm and expertise of the instructors when implementing them, the results are very disappointing and "do not live up to the expectations of their advocates and certainly not the needs of the students 'at risk'" (p. 324). Moreover, most first year students need help to adjust to the demands of university study irrespective of their background or ability and would, therefore, benefit from appropriate support (Alderman, et al., 1993).

The current consensus is that the direct teaching of general all-purpose study skills when provided as stand alone workshops or courses, is not effective (Hattie, et al.,

1996; Kaldeway & Korthagen, 1995; Martin & Ramsden, 1987). A number of reasons are provided for their lack of effectiveness. Firstly, the programs are often taught out of context and cover discrete tactics for implicit local goals that may be dissociated from students' regular courses and, as a consequence, students may find it very difficult to transfer the skills taught into subject specific areas (Garner, 1990; Hadwin & Winne, 1996; Perkins & Salomon, 1989; Tait & Entwistle, 1996). Secondly, programs tend to be short, typically lasting anywhere between one and 30 days. It is suggested that for study skills training to be effective, that is, for students to effectively integrate the skills taught into their repertoire, they need sufficient time not only to learn the skills but also to practise them (Thornton, Bohlmeyer, Dickson, & Kulhavy, 1990). Thirdly, programs often do not focus on the metacognitive or attributional aspects of learning (Hattie, et al., 1996). Fourthly, very often the skills that are taught do not correspond to the actual demands of the courses in which students are meant to use them. Fifthly, programs often do not address personal and contextual factors. Gibbs (1984) suggests that unless such factors are explicitly addressed and explored by students it is very difficult to change the way they study. He believes teaching students to learn must be primarily concerned with students' purposes and their understanding of the nature of the tasks facing them.

There is also, in general, a lack of evidence about the outcomes of study skills courses (Brown & Atkins, 1988; Derry & Murphy, 1986; Garner, 1990). Hadwin and Winne (1996), in their review of the research literature on study strategies, reported that since 1989, only 52 (9%) of 566 articles published about study skills and learning strategies report any sort of empirical test of the intervention's effects on tasks typically undertaken by students. Thus, 514 of the 566 studies reported research on students merely receiving information about a tactic or strategy, as opposed to them actually applying the study tactic for themselves or using the tactic solo at a later stage. Of the 52 studies which included empirical results, only 16 included data gathered about the tactic or strategy from an independent source, such as from a control or comparison group, from an experimenter observing whether the students applied the study tactic or strategy, or by collecting and scoring students' use of the tactic from material students used while studying. Furthermore, of these 16 studies,

only seven were considered in-context or syllabus focussed, while nine were considered out of context or tactic focussed. Hadwin and Winne concluded that "there is a very scant research base upon which to ground recommendations for study tactics that populate the many handbooks available ... or to justify mounting costly programs that promise to improve students' study skills" (p. 13). Hattie, Biggs and Purdie (1996) suggest that, while the typical study skills training package is better than nothing for younger students, it is only marginally so in the case of university students since positive effects of study skills interventions are found to be the least effective for university students.

A more effective way of developing student learning is to provide learning support in the context of students' subject learning. Tait and Entwistle (1996) suggest that for study advice to have maximum impact, it needs to be provided as an essential part of the course and as soon as the need becomes apparent. Hattie, Biggs and Purdie (1996) recommend that training other than for simple memorisation should:

- take place in the context of subject teaching rather than in counselling or remedial centres;
- use tasks related to the content being learned and emphasise the conditions under which strategies work best; and
- encourage learners to be active and metacognitively aware.

Hadwin and Winne (1996) contend that an enriched view of teaching study strategies includes teaching learners about setting learning goals as well as a range of alternative strategies that they may use to reach their goals. They suggest blending students' work in their regular courses with instruction about study strategies. They assert "that higher education should not merely teach students knowledge in curricular subjects ... Institutions should also provide means for students to develop adaptable strategies with which to pursue knowledge and solve problems..." (p. 1). They believe that to learn and hone study tactics and strategies, students must work with real academic content. They provide four reasons for their belief. Firstly, students will value the

strategies more as their use is directly related to academic performance. Secondly, students, after acquiring and practising learning tactics in a range of subjects, will be able to select strategies that match the learning context. Thirdly, learning activities will be genuine and students will, therefore, engage in setting goals, considering strategies and selecting and adapting tactics. And finally, students will more frequently obtain meaningful feedback about their study methods.

Research also suggests that including metacognitive strategies (planning, monitoring and evaluating) in learning support programs has positive outcomes for students' learning, specifically when teaching students to assume control of their own learning (Brown, 1987; Murray-Harvey, 1996; Nist & Simpson, 1990; Palincsar, 1986; Volet, 1991). Students who use metacognitive strategies to control their learning are more likely to be successful learners (Murray-Harvey, 1996; Paris & Winograd, 1990; Volet, 1991; Zimmerman, 1990).

According to Palincsar (1986), for programs incorporating metacognitive principles to be successful, strategies need to be selected wisely, guided instruction in the acquisition and application of the strategies needs to be provided explicitly, and learners need to be informed about the value and consequences of employing the strategies. It is not sufficient for instructors merely to instruct learners about strategies that enhance learning; learners must monitor and regulate their own use of these strategies (Garner, 1990; Palincsar, 1986; Thornton, et al., 1990). In addition, students who are given information about the value of what they are learning, the contexts in which the skills being taught are useful, the means to manage and monitor their use of these skills and the rewards for using the skills, more readily acquire the skills (Thomas, 1988). Finally, for metacognitive strategy instruction to be successful, there needs to be a gradual transfer of control from the instructor to the students (Palincsar, 1986).

Borkowski, Carr, Rellinger and Pressley (1990), focussing on the key role that strategy attributions play in linking metacognitive functioning to academic outcomes, found that students who believed in themselves and their ability, were more likely to

apply their strategic knowledge in appropriate situations. Zimmerman (1990) suggests that knowing that a strategy can aid performance is an important but insufficient condition for using the skill effectively on a particular task. He believes that the latter requires integration of behavioural and environmental information from specific experiences, as well as practice.

Learning support programs should, therefore, be designed to assist learners to become effective and realistic managers of their learning. In line with current research findings, programs aimed at assisting students to learn must, therefore, address contextual factors as well as making students more aware of their own learning processes within particular subject areas. They should also teach good study habits and include strategies that are context specific and therefore relevant to university students' needs (Meece, 1994; Westman & Lewandowski, 1991).

In terms of research on learning support programs, Hadwin and Winne (1996) observe irony in urging students to be strategic in examining whether their study methods are effective when the research field itself "forgoes that enterprise" (p. 13). They appeal to researchers to build in research and evaluation procedures when incorporating learning support programs into curricula – as the present study did. This view is supported by Hattie and his colleagues who suggest that,

> ...at the present time, however, attempts at modeling intervention programs for enhanced learning lack broadly based supportive data. Not to put too fine a point on it, theory may have leapt ahead of the evidence... the relative effectiveness of a variety of programs and thrusts needs evaluating for both theoretical and practical reasons.
>
> (Hattie, Biggs & Purdie, 1996, p. 103)

Research studies relevant to this study

There are few studies at university level that involve teaching the content of a discipline at the same time as the relevant cognitive and metacognitive skills needed to handle the content. Furthermore, while it is now recognised that any learning strategy instruction must address student motivation (McCombs & Whistler, 1989;

McKeachie, Pintrich & Lin, 1985; Pressley, Goodchild, Fleet, Zajchowski & Evans, 1989), few naturalistic in-context studies have used student motivation as an outcome measure (Kaldeway & Korthagen, 1995; Meece, 1991). However, intervention studies at university that have been contextualised, that are subject-specific and implemented by the subject instructor (Alderman, et al., 1993; Dart & Clarke, 1991; Fuller, et al., 1994; Volet, 1991), have produced more positive results than traditional study skills programs. These programs were, therefore, used to inform the design and implementation of the learning support program in the present study which is described in detail in Chapter 3. How these programs were developed (noting specifically the strategies included for enhancing student learning) and implemented (highlighting what worked and did not wherever possible), as well as their outcomes, are described below.

The study by Alderman, Klein, Seeley and Sanders (1993) reported research on second year Educational Psychology students' use of different learning and metacognitive strategies. One group (n = 44 at the end of term) of a total of six groups (with approximately 50 students in each) participated in the study. The learning strategy instruction consisted of 15 minute strategy mini-lessons presented on a weekly basis in a lecture format. The lectures included Thomas and Robinson's (1972) PQ4R (preview, question, read, reflect recite, review) reading strategy, goal setting, summarisation, keyword and other mnemonics, and test-taking tips. The strategies selected were based on those that appeared to be the most powerful for the types of learning required in the course and for perceived student difficulties as determined by the instructors. Students were given a motivation and learning strategy manual (STEPS To Successful Performance) developed for the course. The manual outlined the expectations for performance, and contained suggestions for motivational and cognitive strategy improvement, profiles of successful students, a description of mastery and helpless motivational orientations, guidelines and a form for goal setting and guidelines for notetaking. Students were given marks for completing a weekly learning log. The purpose of the logs was to "foster metacognitive awareness" (p. 41). Students' logs included descriptions and reflections of their learning, areas they needed to obtain clarification about, their proximal goals, and their self-evaluations.

Students obtained feedback from their instructor at two weekly intervals. To provide more extensive strategy training, adjunct learning labs were also offered on a weekly basis. Participation was voluntary and only about one percent of students attended them. Further, the students identified as being in most need of strategy information did not attend the learning strategy labs.

Analyses of the students' learning logs showed that successful students (as determined by the final grade the student earned in the course) reported greatest use of all types of learning strategies and were much more focussed in their goal-setting than less successful students. They also gave more attributions for success than for failure (strategy use accounted for 43% of all the reasons given for either success or failure). The researchers concluded that basic instruction in the processes of learning, along with assistance in developing metacognitive awareness is as important for students as their need for content. Further, they concluded that the students in their sample could not be left to discover strategies on their own and that most students, including those in the successful group, could benefit from strategy instruction. Further, they stated that in order for instructors to model good strategy use and instruct their students effectively, they should become familiar with current research and become good strategy users themselves.

The study by Dart and Clarke (1991) aimed to increase Teacher Education students' understanding of the learning process by getting them to focus on their own learning experiences in a specially designed program in Educational Psychology. The learning environment was modified and students were encouraged to take greater responsibility for their own learning. The program aimed to help students develop self-regulation of learning by involving them metacognitively, motivationally and behaviourally as active participants in their own learning. Experiences included negotiation of the curriculum; engaging in cooperative learning groups and peer teaching activities; developing learning contracts; self, peer and collaborative assessment; and critical reflection on learning experiences by means of an ongoing learning log. In terms of learning strategies specifically, students discussed the strategies they used to learn and shared their summaries and concept maps. Students

were encouraged to set goals, monitor their strategy use and reflect on their learning. They were given guided library experiences to help them identify and locate information sources and were given descriptions of organisation, elaboration, comprehension and affective learning strategies. Furthermore, they were shown the "how", "what", and "why", of using them and told to apply them to their course material. Results of the program suggested that for the group as a whole – notwithstanding that the study relied on self-report data only and that students (the majority of whom were female) self selected into the study – the program had a positive effect on students' deep and achieving approaches to learning. Most students also reported that they believed they had become more metacognitively aware. Some students, however, found that external institutional pressures made it difficult for them to maintain their involvement and others "just did not like the approach at all" (p. 332). The authors suggest that "there is much work yet to be done in this area" (p. 333) and that, because there were class specific changes for some of the variables, additional information about specific classroom learning environments is needed in future research.

In the study by Fuller and his colleagues (Fuller, et al., 1994; Fuller, Chalmers & Kirkpatrick, 1995; Kirkpatrick, et al., 1993; Kirkpatrick, et al., 1993) first year students studying Educational Psychology were taught learning strategies which were integrated into their regular course work in a semester long intervention program. Students were encouraged to classify their learning goals, choose learning strategies that were likely to help them achieve these goals, apply these strategies, and monitor their progress in learning. The effects of the intervention in terms of students' learning intentions, strategies, perceptions and performance, were explored. Results indicated that the program had a positive effect on students' use of some learning strategies, their perceptions of the relevance of the unit and on the grades they achieved. However, as the changes were not maintained beyond a single semester of instruction, the question remains as to whether a longer program would be more effective. Furthermore, while students were taught learning strategies which the researchers identified as important, no changes were made to the processes of instruction or assessment in the course. Student responses to the program varied. Some students

reported that they believed they were being required to work harder than students in the other classes. A number of students did, however, comment that they experienced a greater awareness of the strategies available to them and could see their usefulness to their learning. Some students reluctantly admitted, that, while the approach required more effort on their part, it did lead to a greater understanding of the subject matter (Kirkpatrick, et al., 1993).

Volet's (1991) study focussed on enhancing first year computer science students' learning by the regular subject tutor teaching a five-step metacognitive strategy relevant for computer programming, modelling and coaching the relevant instructional techniques, and encouraging a social support network based on collaboration and partnership. Results showed that the program had positive effects on students' use of computing techniques to solve novel problems, on their personal satisfaction with the learning experience, and on their motivation for further study in computing. Students' comments about the informal collaboration and partnership system were varied. Half of the group reported some collaborative work and rated it very useful to their learning. The other half did not rate collaboration as very useful. However, they did not report spending much time collaborating with peers. A few students reported making no effort to work with others. The author suggests that, for strategy training to be effective, students need to be convinced that the target strategy is useful, relevant, and will lead to an improvement in their performance. This is particularly important if the strategy takes more time and is more mentally demanding than the strategy currently being used. The importance of measuring the success of the intervention program in terms of students' cognitive and affective appraisals of the learning situation was highlighted. Volet (1991) concludes, however, that few strategy instruction studies have included affective outcomes in their measures of success.

Overall, these studies suggest that a range of cognitive, metacognitive, motivational and affective strategies relevant to the discipline and students' needs should be included in learning support programs. Strategies should be taught "just in time" and by the discipline instructor who knows about the research on strategy instruction and

is a good strategy user him/herself. Furthermore, students need to see the value of the strategies being taught and should be given a variety of learning opportunities to become informed about the use of the strategies, and to practise them. Teaching strategies in context appears to benefit most students and to overcome the problem of low attendance typically associated with support that is offered on a voluntary basis.

A review of the research literature by Hadwin and Winne (1996) suggests that when instruction is embedded in regular university courses – that is, in context – research provides modest empirical support for teaching students about concept mapping, self-questioning and monitoring the time spent studying. The meta-analysis by Hattie, Biggs and Purdie (1996) suggests that there are several conditions for successful strategy training, namely high student motivation, self-efficacy and appropriate attributions (such as attributing failures to lack of effort, and setting realistic and attainable goals); strategic and contextual knowledge for doing the task; and a teaching-learning context that supports and reinforces the strategies being taught. Biggs (1987) suggests also that students' need for study advice will differ. Students who are new to education or who are experiencing major difficulties will often initially only be able to cope with simple hints and tips, while those who are more experienced or sophisticated in studying may benefit from more detailed suggestions and explanations.

In summary, in terms of developing students' learning strategies and the specific studies on supporting learning, the current consensus about the nature of interventions that might enhance learning includes teaching a range of cognitive, metacognitive and affective strategies, and involving motivation both as a precursor to the use of effective strategies and as support for their continued use. Furthermore, learning strategies are best taught in context by the subject instructor and special attention should be paid to the teaching context.

Measuring and assessing students' learning strategies

A change in the more recent research on student learning has been to focus attention on ecologically valid tasks, particularly those tasks that students need to master in order to succeed at university (see Pressley, et al., 1990). This change in focus to the more applied aspects of cognition has affected the methods used to measure and assess learning strategy acquisition and use (Biggs, 1993; Weinstein, Zimmerman & Palmer, 1988). Students' use of learning strategies, and/or specific components of their strategy use, have been measured and/or assessed using questionnaires, interviews and written work. A brief overview of how these measures have been used in recent research, and the rationale for the measures used in the present study, are provided next.

In terms of questionnaires, the Learning and Study Strategies Inventory, the Motivated Strategies for Learning Questionnaire, the Approaches to Study Inventory, the Study Process Questionnaire, and the Metacognitive Awareness Inventory have all been used by researchers studying student learning. These are described below.

Weinstein and her colleagues at the University of Texas have developed the Learning and Study Strategies Inventory (LASSI) (Weinstein, 1988; Weinstein, et al., 1988). The LASSI is a Likert-type self-report instrument designed to measure university students' use of learning strategies and study attitudes. Although some of the topics related to students' learning strategies which are measured by the LASSI are similar to the ones used in the present study, the inventory was not used because the items are integrated somewhat differently from the Conceptual Model used in the present study and described in detail in the next section.

Pintrich, McKeachie, Lin and Smith (1990) have developed the Motivated Strategies for Learning Questionnaire (MSLQ), a Likert-type self-report instrument designed to measure university students' motivational beliefs and learning strategy use. The MSLQ was specifically selected for use in the present study because the theoretical framework underpinning the MSLQ is in keeping with the more recent theories of

student learning. The general framework that underlies the MSLQ is based on a social-cognitive model of motivation and a cognitive model of student learning and information processing which is outlined in detail in the Conceptual Framework section later in this chapter. The MSLQ is described in detail and its use further justified in Chapter 3.

A number of self-report questionnaires which attempt to measure university students' approaches to learning or study has been developed. The best known of these are Entwistle's Approaches to Study Inventory (ASI) (Entwistle, 1984; Entwistle, 1988) and Biggs' (1987) Study Process Questionnaire (SPQ). The ASI and SPQ are primarily designed to measure students' approaches to learning rather than the use of learning strategies specifically. Since a direct measure of students' use of learning strategies was required in the present study, both the ASI and SPQ were considered inappropriate. Furthermore, Abouserie (1995) suggests that "an analysis of students' learning which takes account of personality and information processing is likely to bear more fruit in the long run than simply labelling learning as 'deep' or 'surface'" (p. 25).

Schraw and Dennison (1994) have developed a 52 item inventory, the Metacognitive Awareness Inventory (MAI), which specifically measures adult's metacognitive awareness. The MAI reliably measures two kinds of metacognitive knowledge namely, knowledge of cognition and control of cognition, but not learning strategies.

In terms of assessing students' use of learning strategies, the method most commonly used is the interview. Zimmerman and Martinez-Pons (1986) have developed and validated a structured interview schedule, the Self-Regulated Learning Interview Schedule (SRLIS), for obtaining information about high school students' use of learning strategies in naturalistic settings. Zimmerman and Martinez-Pons report that the data obtained using the schedule correlated well with academic performance. Furthermore, they found that the interview procedure provided reliable evidence concerning students' self-regulation reports and had potential for describing individual

differences in student self-regulated learning. The interview schedule was adapted for use in the present study and is described in detail Chapter 3.

Learning strategies have also been assessed by analysing students' accounts of strategy use. Alderman, Klein Seeley and Sanders (1993) used this methodology in the study which examined the learning strategy proficiency of 44 preservice students discussed earlier. Students were required to keep learning logs in which they wrote, on a weekly basis, about their learning strategies. The researchers concluded that use of the learning logs provided images of learners that could not be obtained through the use of questionnaires and surveys. While learning logs are an excellent way of obtaining data on students' strategy use it was not possible to use them in the present study, principally because their use would have relied on students completing them on a voluntary basis and considering the demands placed on students when writing learning logs it was envisaged that student compliance would have been low.

In summary, in relation to measuring and assessing learning strategies, approaches ought to take into account their complex and multifaceted nature. As the above overview shows, different approaches will yield different kinds of information on various aspects of learning strategy use. Questionnaires, inventories, interviews and logs can all provide useful data when studying student learning. However, which method or combination of methods is used should take into consideration the strengths and limitations of each method and be determined by the aims of the study. In order to obtain data on various aspects of learning and to increase the chances of obtaining valid and reliable data, the present study has used a combination of methods. These are described in detail in Chapter 3.

Conceptual framework

In order to relate cognitive, metacognitive, motivational and affective factors in a specific learning context and, therefore, to make sense of student learning at university, a way of conceptualising the factors was needed. A conceptual framework that appeared to include most of these factors and to address many of the issues raised in the literature, and which provided a coherent, overarching structure for the present study was the General Model of College Teaching and Learning developed and used by McKeachie, Pintrich, Lin and Smith (1986) in their review of the research literature on teaching and learning and in the development of the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, et al., 1991). The Model and its relationship to this study are discussed in detail in the sections that follow.

In the first section, a brief description of the Model and the rationale for using it to underpin the present study, are outlined. In the second section, the domains of the Model as they initially related to the present study, are described. In the third section, how selected domains of the Model were re-conceptualised in light of current research literature and used in the present study, is discussed.

Description and rationale

The conceptual framework underpinning the present study is based on McKeachie, Pintrich, Lin and Smith's (McKeachie, et al., 1986) General Model of College Teaching and Learning, shown in Figure 2.1. In the figure, the boxes represent the domains and the arrows represent hypothetical relationships based on an analysis of the research literature on teaching and learning by McKeachie, Pintrich, Lin and Smith.

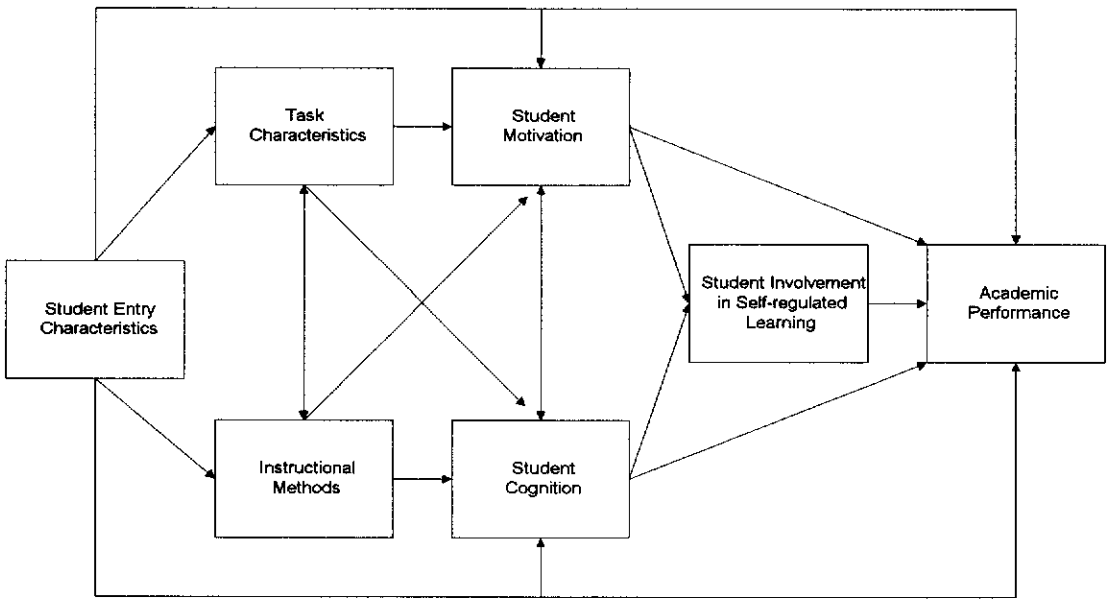


Figure 2.1 General Model of College Teaching and Learning (McKeachie, et al., 1986).

The Model is based on a student mediation model, which recognises that the effects of instruction are mediated by students' characteristics, and focuses on the process-product relationships between teacher behaviour and student outcomes. The Model is based on current theoretical perspectives, that is, student cognitions and perceptions are based on a general cognitive information-processing and social cognitive approach to teaching and learning. Furthermore, in line with current thinking, the Model assumes that the effects of instruction are mediated by students' cognitive and motivational characteristics, and that students are active processors of information (Weinstein, 1989). Students are thus conceptualised as initiators, planners, and observers of their own instructional experiences (Zimmerman & Pons, 1986).

The Model is particularly suited to research on student learning at university. McKeachie, Pintrich, Lin and Smith (1986) argue that a student mediation model is most appropriate when studying university students' learning because much of their learning occurs outside the classroom and they are therefore in control of their own learning.

The Model is directly applicable to the present study because, as indicated previously, it is based on current theoretical perspectives and integrates findings from current research in cognitive and instructional psychology, as well as classroom based educational research. Furthermore, there is a direct match between the aims of the study and the Model in that both focus on the relationships between teaching, student learning and educational outcomes at university. The Model is particularly suited to the present study because it allows the roles of different patterns of student motivation and cognition, and their impact on the instructional activities that occur in university classrooms to be examined. Further, how students' motivational and cognitive perceptions about academic work mediate their academic performance can be specifically investigated. In addition, the Model allows investigation of specific context-process issues relating to student characteristics and instruction.

Finally, because one of the aims of the present study was to inform instructional improvement efforts it is appropriate for the study to be based on a model – such as the General Model of College Teaching and Learning – which reflects the complexity of the interrelationships between teaching and learning. Pintrich (1988) believes that models that are useful to educational practitioners should be concerned not only with the psychology of student learning and development but also with the psychology of instruction. Programs aimed at supporting student learning need, therefore, to be based on models that focus not only on student outcomes, but also on instructional processes and activities, and on other student mediating variables such as knowledge structures, learning strategies and motivation. If programs and the models on which they are based focus on the links between actual instructional processes and mediating variables and outcomes, then the information generated will be more useful for actual improvement efforts. A process-oriented approach, on which the study is based, will therefore help the field move beyond the identification of instructional problems to practical suggestions for instructional design and improvement (Pintrich, 1988; Volet, 1995).

Domains of the Model

The domains of the Model, namely, *Student Entry Characteristics*, *Task Characteristics*, *Instructional Methods*, *Student Motivation*, *Student Cognition*, *Student Involvement in Self-regulated Learning*, and *Academic Performance* and how they were initially distinguished conceptually in the present study are outlined below.

Student Entry Characteristics

The *Student Entry Characteristics* domain is included to acknowledge that students do not enter higher education as "blank slates", but with prior knowledge and a variety of cognitive and motivational characteristics already developed through previous educational experiences. Traditional research approaches to student entry characteristics have focussed on intellectual abilities, personality characteristics and cognitive styles, and have tended to assume that these characteristics are static and enduring personal traits. However, in the Model, the student entry domain reflects a more up-to-date, dynamic, process-oriented approach (Corno & Snow, 1986; Pintrich, 1988) to learner characteristics, which suggests that they are not fixed but interact with the learning environment to affect learning outcomes. Thus, in the present study, students' entry characteristics are considered to interact with their perceptions of instruction and learning activities.

Task Characteristics

The *Task Characteristics* domain includes the "actual requirements of the course (e.g., the papers, quizzes, exams, presentations, lab reports, etc.)" (McKeachie, et al., 1986, p. 4). Thus, in the present study, the domain included all the assessment items that students were required to complete namely, essays, project reports, short answer tests and examinations. The task construct is considered to play an important role in the Model, because it is through preparing for, engaging in, and completing required tasks that students exhibit various cognitive and motivational variables. These in turn influence students' involvement in learning and ultimately, their academic performance

(McKeachie, et al., 1986). Tasks that offer personal challenge, provide variety, and appeal to students' interests, have been shown to increase intrinsic motivation (Malone and Lepper cited by Ames, 1992). Thus, in the present study it is assumed that the tasks that students are asked to perform have significant effects on their learning.

Instructional Methods

The *Instructional Methods* domain includes all the activities that students engage in and which involve their interaction with peers and instructors, including lectures, tutorials, discussions, and class presentations. The Model assumes that instructional activities influence student learning outcomes. Instructional activities that have been shown to be effective because they promote co-operative student learning are peer learning and teaching (including small group work, student-led discussions and learning in pairs); student centred teaching (which encourages classroom interaction and focuses on both cognitive and affective elements); case study methods; role-plays; games; and simulations (McKeachie, et al., 1986). In the Model and in the present study, active participation is seen as the key to learning, and any instructional activity which constrains participation is considered to not only induce passivity, but also to be educationally disadvantageous.

Student Motivation

The *Student Motivation* domain assumes a general expectancy-value model of motivation based mainly on a social-cognitive approach. The social-cognitive approach allows motivational and cognitive constructs to interact in a way that is not often found in cognitive and instructional research (Pintrich, 1989). Further, in this type of newer cognitive model of motivation students' perceptions of themselves and the task are considered to be the most important components of motivation. Thus, all of the constructs discussed below are considered to be student perception constructs and are assumed to mediate the relationship between the classroom environment and student involvement and academic performance (McKeachie, et al., 1986). The

motivation construct includes three general components namely, value, expectancy and affect (Pintrich & Johnson, 1990).

Value component

Value components incorporate "students' reasons for engaging in a task as well as their beliefs about the importance, utility, or interest of a task" (Pintrich, 1989, p. 120). The Model focuses on two value components that are relevant to university learning namely, student goal orientation (both intrinsic and extrinsic) and perceived task value. In terms of student goal orientations, in line with current research, the Model assumes that students may differ on both the intrinsic and extrinsic dimensions. This view is in contrast to traditional perspectives which view intrinsic and extrinsic goal orientations as the extremes of a bi-polar continuum. Thus, the Model assumes that students could have both intrinsic and extrinsic reasons for engaging in a task. For example, some students may become very involved in a task because they have set themselves both intrinsic and extrinsic goals, such as, both understanding the material, as well as obtaining a high score. The perceived task value component of the Model has three sub-components namely, students' perceptions of the task's importance to them, their general attitude towards or liking of the task (including students' interest in the course), and their perceptions of the utility of the task in terms of their future goals. Tasks that are important, interesting and useful are all considered to promote cognitive engagement and thus, student involvement.

Expectancy component

Expectancy components include students' beliefs about their ability to perform a task, their judgements of their self-efficacy and control over the task, and their expectancy for success. Research (for examples see Pintrich, 1988) on the relationship between university students' internal control beliefs (the belief that the student is in control of his/her actions) or external control beliefs (the belief that others, for example, instructors or parents, are in control of the student's actions), and academic performance, suggests that the relationship between perceptions of control and academic performance may not be straightforward. For example, students who attribute successful outcomes to internal causes, and failure to external causes may

perform better on academic tasks and have higher expectancies for future success than students who have high internal control beliefs for both success and failure (Harter cited by Pintrich, 1989). Thus, in the Model, higher levels of internal control are not automatically assumed to result in more positive outcomes, because students' attributions need also to be considered. In the Model, self-efficacy is defined as students' "beliefs about their performance capabilities in a particular domain" (Pintrich, 1989, p. 125), and includes students' judgements about their ability to accomplish specific goals or tasks. The construct is, therefore, considered to be a relatively situational or domain specific construct rather than a global personality trait. Further, grading procedures may influence students' beliefs about their efficacy and their actual academic performance outcomes. For example, students may believe that they can perform well on an examination, while at the same time expecting a low grade (due to either a tight grading curve or because the instructor's assessment criteria are arbitrary).

Affective component

The affective component includes students' emotional reactions to the assessment tasks, specifically test anxiety. Further, an interactive relationship between test anxiety, motivation and cognition is suggested. This relationship is based on research (for examples see, Pintrich, 1989) which has linked test anxiety to students' motivational orientations and cognitive strategy use. The research suggests that highly anxious students' performance can be enhanced only through the motivated and effortful use of appropriate cognitive strategies.

Student Cognition

The *Student Cognition* domain refers to the cognitive strategies that students use to learn, remember and understand the material. Thus, the cognition construct includes students' general learning strategies for processing of academic information, their knowledge about the content, and their general problem solving and thinking skills. The cognitive construct is based on an information-processing approach to learning and is organised into general cognitive strategies, metacognitive strategies (executive

processes that plan and direct learning), and resource management strategies (Pintrich & Johnson, 1990).

General cognitive strategies

The general cognitive strategies construct includes learning strategies that are related to the encoding and retrieval of material. Weinstein and Mayer (cited in Pintrich, 1989) categorise these strategies as rehearsal, elaboration and organisation. According to Weinstein and Mayer, rehearsal strategies enhance the learner's attention and encoding of information. Examples include the learner reciting or naming items to be learned, saying the material out aloud, copying the material into a notebook, underlining, or highlighting sections to be learned. Weinstein and Mayer suggest that elaboration strategies assist learners to store information in the longterm memory by building internal connections between new and old information. Examples of elaboration strategies are paraphrasing, summarising, generative note-taking, explaining, and question asking and answering. Further, Weinstein and Mayer suggest that organisational strategies help the learner select appropriate information and construct connections between information to be learned. Organisational strategies include selecting the main idea, clustering ideas, outlining ideas, ordering information, and making diagrams. In the Model, critical thinking is also included as a general cognitive strategy (Pintrich, et al., 1991) and refers to the degree to which the learner reports applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations with respect to standards of excellence. Research has found that students' use of different general cognitive strategies such as rehearsal, elaboration, and organisation fosters their cognitive engagement in learning and results in higher levels of academic performance (Weinstein & Mayer, 1986).

Metacognitive strategies

Metacognition has been described as learners' awareness of their cognitive processes, as well as the use of that awareness in controlling and improving their cognitive processes (Biggs & Moore, 1993). In the Model, however, the metacognitive construct is related to the control aspect of metacognition only and includes the strategies used in planning, monitoring, and adapting cognitive processes (McKeachie,

et al., 1986). Planning activities help learners with their selection of strategies and processing of information and include setting study goals, skimming material, generating questions before reading, or doing task analyses. Such activities include all self-monitoring during cognitive activity. Monitoring activities are an essential aspect of metacognitive control because they assist the learner in understanding the material being learned and integrating it with prior knowledge. Monitoring strategies include self-testing, self-questioning, and tracking of attention while learning. Adapting strategies, for example, re-reading areas not understood, reviewing material, and adjusting strategies to suit the task, are related to monitoring activities and are assumed to improve performance by assisting learners in checking and correcting their behaviours as they learn. Research suggests that good learners engage in more metacognitive activities than do poor learners (Murray-Harvey, 1996; Paris & Winograd, 1990; Volet, 1991; Zimmerman, 1990).

Resource management strategies

Resource management strategies concern students' use of strategies that assist them to manage their environment and available resources (McKeachie, et al., 1986). Resources include the time available for study, the study environment, outside support, and the learners themselves (in terms of effort and persistence). While resource strategies are seen as both cognitive and metacognitive in nature, they are considered different enough to warrant a separate category within the cognitive domain. Strategies include, for example, managing time in terms of keeping a calendar to organise study activities, managing actual time when studying, managing the study environment so that the designated study area is organised and free from distractions, managing the support of others in terms of knowing when, where and how to seek help, and managing learning in terms of persisting and expending effort in the face of distractions and competing task demands. Research shows that active learners are more likely to seek help when it is needed and that help seeking is directly related to learners' use of appropriate cognitive, metacognitive, and resource management strategies (Karabenick, 1991; McKeachie, et al., 1986). In addition, effort and persistence are considered to be two of the most important learning strategies and are suggested to be directly related to motivation (Pintrich, 1989). Further, being able to

coordinate cognitive activities with the appropriate levels of effort are suggested to be the key aspects in self-regulated learning skill (Corno and Rohrkemper cited by Pintrich, 1989).

Student Involvement in Self-regulated Learning

The *Student Involvement in Self-regulated Learning* domain concerns students' cognitive engagement with and commitment to the task at hand. The conceptualisation of student involvement assumes active student learning. Thus, it is assumed that the more students are interested and meaningfully engaged in the task, the more they will learn. Self-regulation is conceptualised as a combination of motivational and cognitive (including metacognitive) involvement with the task. This conceptualisation is supported by Corno and Rohrkemper (cited by McKeachie, et al., 1986) who suggest that self-regulated learners are able to coordinate the cognitive and motivational aspects of learning.

Academic Performance

The *Academic Performance* domain concerns any of the potential cognitive outcomes of university study. In the present study, students' academic performance related to their achievement on the set assessment tasks, namely short answer tests, written project reports, group tutorial presentations and multiple choice examinations (see Chapter 3).

The Model and this study

The McKeachie, Pintrich Lin and Smith Model addressed many of the major issues relevant to the present study. However, it appeared early in the study that two of the domains, namely, *Student Motivation* and *Student Cognition,* had some specific limitations for use in the present study. These included the limited role of affect in learning (specifically the narrow conceptualisation of the affective component to include only test anxiety in the *Student Motivation* Domain) and the combining of the

cognitive and metacognitive constructs under the *Student Cognition* domain. How the *Student Motivation* and *Student Cognition* domains were re-conceptualised is outlined below and presented in Figure 2.2.

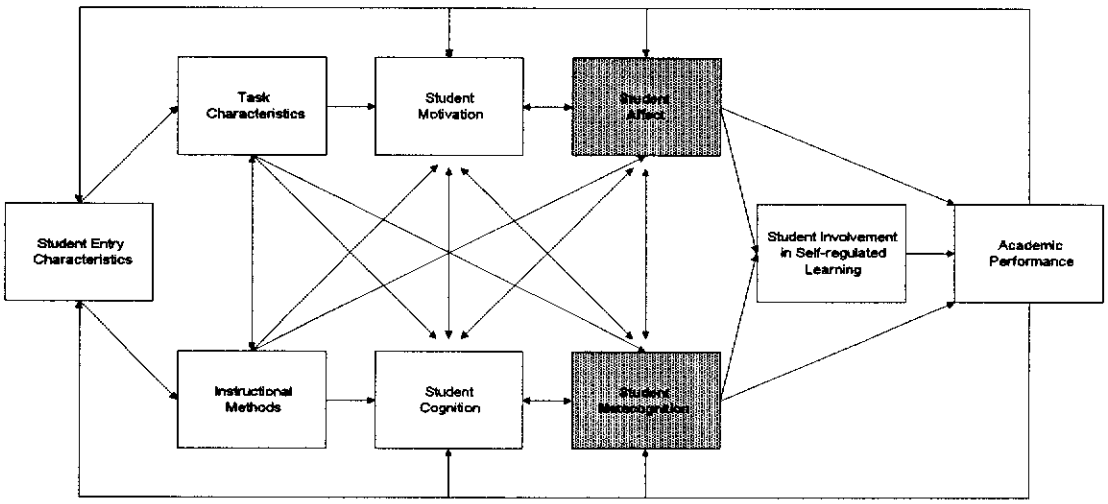


Figure 2.2 Conceptual Model underpinning the current study (based on McKeachie et al's General Model of College Teaching and Learning) and showing domains adapted for the present study.

The role of affect

In terms of current research and the present study, it is argued here that the role of affect in learning is under-represented in the original Model, being represented only as test anxiety in the *Student Motivation* domain. Test anxiety has been shown to be related to student academic performance (see for example, Biggs & Moore, 1993; Covington & Omelich, 1987; Pintrich, 1985; Tobias, 1985), but affect is much broader than test anxiety. Thus, in the adapted Model, the affective construct has been expanded to incorporate more fully the role of student affect in learning and academic performance at university. Affect is expanded to include a much broader range of the learner's possible emotional responses to the learning situation, including feelings of confidence, worry, anxiety and discomfort.

The importance of affect in learning is supported by many researchers, including Boekaerts (1993; 1995), Borkowski, Carr, Rellinger and Pressley (1990), Isen, Daubman and Nowicki (1987), McCombs and Whistler (1989), Morgan (1995), Nist,

Simpson, Olejnik and Mealey (1991), Shuell (1990), and (Zimmerman, 1990), all of whom have suggested that the affective dimension must be addressed if a more comprehensive picture of student learning is to be achieved. Ames (1992) reports that researchers have demonstrated that task engagement is accompanied by a range of self-guiding thoughts that facilitate high quality involvement in learning. Effort is necessary for success or improvement in performance, and positive affect is linked to effort utilisation, and thus to the activity itself. McCombs and Whistler (1989), Nist, Simpson, Olejnik and Mealey (1991) and Schuell (1990) suggest that, if learners experience positive feelings about the learning task or themselves as learners, they are more likely to be motivated to achieve their learning goals. Zimmerman (1990) suggests that affective states influence self-regulated learning and that low anxiety levels and high self-efficacy perceptions can promote the use of metacognitive processes and the setting of long-term goals. Biggs (1993) suggests that, if students develop a metacognitive approach to their learning, they will experience less anxiety. Thus, as suggested by Weinstein (1988), the use of affective strategies helps to create and maintain a suitable internal and external climate for learning.

In contrast to the above, however, some researchers suggest that there may be a negative relationship between affective variables such as learner enjoyment (satisfaction) and academic performance. For example, research by Clark (1980; 1990) has found that students learned the least from instructional methods they enjoyed the most. Clark suggests that this finding may be related to the amount of effort that students perceived was required of them by the method of instruction, as well as to whether the demands placed on them matched or compensated for the learning strategies they needed in order to perform well. Further, as learning is often risky and challenging and involves completing tasks which learners may find frustrating or boring, learning may be associated with negative feelings such as anxiety, worry, and discomfort (Radloff, 1997). However, affective responses such as shame, guilt, anger, or indifference that are generated when completing tasks may have powerful motivational properties (Berliner, 1989). Radloff (1997) suggests that there may be an optimum degree of affect, similar to the inverted U relationship suggested for anxiety, which is needed in order to facilitate the development of self-

regulation. McInnis, James and McNaught (1995) also suggest that a level of anxiety is necessary in a learning environment for effective learning to take place. Radloff (1997) states that optimum affect is important for effective learning and, therefore, any model of student learning ought to include a focus on the role of feelings. Furthermore, research on student learning suggests that, if affect is not investigated, a whole class of variables that are important in furthering the understanding of the causes of learning behaviour will be missing (Berliner, 1989).

In the adapted Model, affect is considered to be separate from both motivational and cognitive constructs. Some researchers argue that affect often occurs without cognition, has primacy over cognition and may even be controlled by different anatomical structures (Izard, 1984). Berliner (1989) states that it is very difficult to associate affective responses with many kinds of cognitive processes, and that "there is reason to believe that affect is completely independent of cognition" (p. 328). He also suggests that affective responses may not be elicited during a good deal of cognitive information processing, but may be elicited much more often when motivational information is being processed. Thus, in the adapted Model, affect is not limited to the motivational domain only, but is incorporated as a central component of the Model, as illustrated in Figure 2.2. Further, the construct is expanded to include the learner's emotional response to the learning situation including, amongst others, feelings of, happiness, satisfaction, comfort, interest, fear, and boredom, and specifically including confidence, anxiety, worry and discomfort.

Metacognition

In the original Model, metacognition is subsumed under the *Student Cognition* domain. However, while cognitive and metacognitive strategies are often regarded as being similar, current research suggests that metacognitive strategies have different roles in learning, in that metacognitive strategies direct and control cognitive strategy use (McCombs & Marzano, 1990; Radloff, 1997; Vermunt, 1996). Specifically, McCombs (1990) argues that cognitive operations differ from metacognitive operations in that they become automatic and require less conscious control than do

metacognitive operations. Paris and Winograd (1990) also suggest that metacognition is the vehicle for understanding the relationships between cognition and motivation. For the present study metacognition is thus represented as a separate domain in the adapted Model.

Further, in the original Model, the control and regulation aspects but not the awareness of and knowledge about cognition aspects of metacognition, are focused on because McKeachie et al (1986) believe that students' use of metacognitive learning strategies involves the control and regulation aspect of metacognition more than the knowledge aspect. In the present study, however, both the awareness of and knowledge about cognition as well as the control and regulation aspects are included. Brown and Palincsar (1982) suggest that the two aspects of metacognition (that is, knowledge about and regulation of cognition) are closely related, with each supporting the other recursively. Further, they believe that while the two aspects are readily distinguishable and have quite different historical roots "attempts to separate the two forms lead to oversimplification" (p. 1). Moreover, they suggest that the two aspects are integral to any learning process and are the central mechanism which facilitates cognitive growth and change. Thus, metacognition is described as both:

- knowledge about variables relating to person, task and strategy with learners being considered metacognitively aware if they use reflective thinking to develop an awareness about their own person, task and strategy knowledge in a given context; as well as

- the ability to control that knowledge through the use of executive functioning in terms of planning, monitoring and revising thinking.

Biggs and Moore (1993) suggest that the everyday word 'reflection' describes metacognition very well, and that being metacognitive incorporates the ability to reflect critically and realistically on what is being done. They also suggest that reflecting on learning behaviour can transform errors or disasters into positive learning experiences and can therefore help learners cope with new and complex

situations of all kinds. The original Model therefore is expanded to include this view of metacognition.

In summary, as illustrated in Figure 2.2, a dynamic and synergistic integration of cognition, metacognition, motivation, and affect is proposed in the Conceptual Model that underpins this study. As discussed, students' entry and task characteristics, as well as the instructional methods selected by the instructor are also acknowledged as interacting to influence student learning and academic performance. Thus, the Model underpinning this study highlights the complex nature of teaching, learning and the learning environment and attempts, therefore, to avoid focussing on one dimension only. A multi-dimensional approach is adopted because a narrow focus may limit the outcomes of the present study and thus the contribution that it may make to the understanding of university teaching and learning.

Throughout this chapter the insights from the literature which guided the present study were highlighted. The insights highlighted were the importance of; promoting positive approaches to and conceptions of learning, acknowledging the role of the learning context, exploring the relationship between study strategy use, mode of assessment and the role of affect in learning and academic performance, acknowledging students' perspectives and exploring the instructor's role in supporting learning, creating positive climates which promote academic involvement and deep learning, verifying and contextualising student learning for specific disciplines, conducting research which involves both direct and applied teaching about learning, providing learning support which is in-context and implemented by the discipline instructor, evaluating – using a combination of methods – the outcomes of learning support provision, and using a sound conceptual framework to underpin research on student learning.

In Chapter 3, how the Conceptual Model described in this chapter was used to underpin the development and implementation of the learning support program is outlined. Specifically, the *Instructional Methods* domain, which includes all the learning support tasks and instructional activities which students and the instructor

engage in, was conceptualised to include the learning support program. How this change impacted on the *Student Cognition*, *Student Metacognition*, *Student Motivation*, *Student Affect* and *Academic Performance* domains of the model is explored in Chapters 4 and 5.

Chapter 3

Methodology

Phase 1: Design of learning support program
Approach adopted and strategies selected
Phase 2: Implementation of learning support program
Participants
Context
Phase 2: Evaluation of learning support program
Data gathering approach
Research design
Instruments
Procedure
Phase 3: Analysis of data
Quantitative analysis
Qualitative analysis
Phase 4: Design of expanded learning support program
Approach adopted and strategies selected
Phase 4: Implementation of learning support programs
Participants
Context
Phase 4: Evaluation of learning support programs
Data gathering approach and research design
Instruments
Procedure
Phase 5: Analysis of data
Quantitative analysis
Qualitative analysis
Validity and reliability of data
Quantitative data
Qualitative data
Overview of the five Phases of the study

In this chapter, the methodology used in the study is described. As outlined in Chapter 1, the study was designed in five phases. Phase 1 outlines the design of the in-context learning support program which was based on integrating cognitive, behavioural and social learning theoretical perspectives and which aimed to assist students to be effective learners in the context of their everyday learning in a subject discipline. Phase 2 describes the implementation and evaluation of the learning support program. Specifically, the participants and context are described, and the quantitative and

qualitative methodologies employed to gather the data and the justification for the research design, are presented. Phase 3 presents how selected quantitative and qualitative data collected in Phase 2 of the study were analysed. The specific procedures used to analyse the data are described and justified. Phase 4 outlines the way in which the learning support program developed in Phase 1 was expanded, further developed, implemented and evaluated. Phase 5 presents how data were analysed, synthesised and reflected on. The chapter ends with an overview of the five Phases of the study.

Phase 1: Design of learning support program

Approach adopted and strategies selected

As outlined in Chapter 3, the *Instructional Methods* domain of the Conceptual Model was expanded to include all the learning support tasks and instructional activities which the students and the instructor engaged in as part of the learning support program. Further, as suggested by the Conceptual Model, underlying both the learning support tasks and instructional methods selected, was the view that learners are active participants in the learning process and that learning involves a change in the way learners think, feel and behave. In selecting tasks and instructional activities to support student learning, the researcher, as an experienced instructor, adopted an eclectic and pragmatic approach. Thus, while it was considered essential for both the tasks and strategies selected, and the approach adopted, to be theoretically accepted in current literature, the overriding imperative was to select strategies which research has shown have the greatest likelihood of working in practice.

No theory explains and predicts learning perfectly and no single theory offers all the answers. It makes sense, therefore, to consider what each has to offer (Woolfolk, 1995, p. 16). Most learning theories emphasise the role of students in their own learning. They also assume that student learning often requires additional preparation time, vigilance and effort by students and that unless the outcomes of these efforts are

sufficiently attractive, students may not be motivated to learn. Theorists differ, however, over the type of outcomes they emphasise; behavioural researchers emphasise extrinsic outcomes of learning, whereas other researchers tend to focus on intrinsic ones such as self-perceived success or mastery (Zimmerman & Schunk, 1989). As Pintrich (1990) states, it is through the thoughtful selection of approaches, each with its own theoretical perspective, that students' learning of course content and learning about learning itself, can be improved. Furthermore, McCombs (1991) suggests that researchers should strive to emphasise theories that integrate principles of learning, motivation, cognition and affect, because an integrative theory can more holistically account for complex human psychological and behavioural functioning in a variety of contexts. Moreover, no one theoretical perspective offers an appropriate range of learning strategies. Thus ultimately, in the present study, the approach adopted and strategies selected were located in a combination of the Cognitive, Behavioural and Social learning theoretical perspectives, as illustrated in Figure 3.1 and described in the next section. Figure 3.1 illustrates that equal importance was given to each of the theoretical perspectives and locates the strategies included in their theoretical perspective.

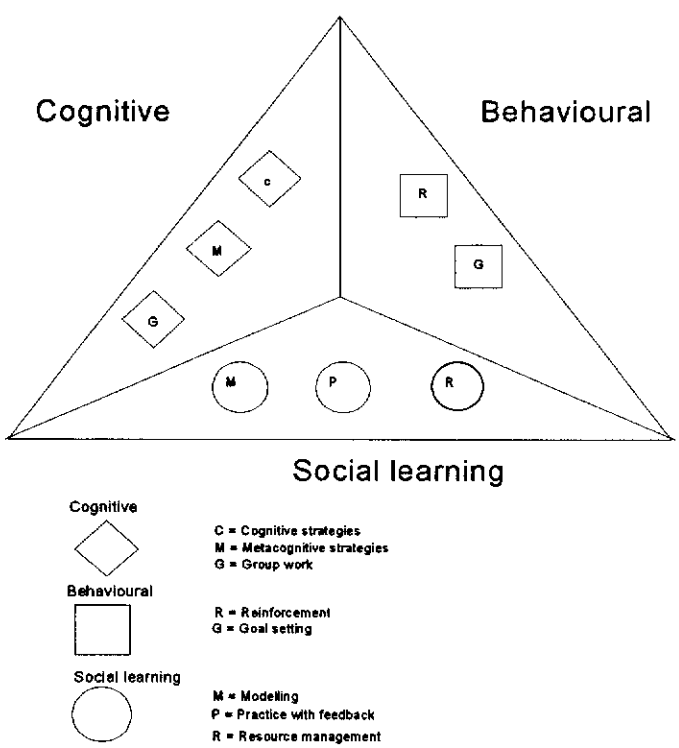


Figure 3.1 Cognitive, Behavioural and Social learning perspectives underlying the approach adopted and strategies selected.

Cognitive perspective

The cognitive view of learning emphasises the active mental process of acquiring, remembering, and using knowledge (Woolfolk, 1995). The cognitive approach seeks to understand how incoming information is processed and structured in memory and considers the outcome of learning as depending jointly on what information is presented and on how the learner processes that information (Weinstein & Mayer, 1986). One widely used cognitive model of both the structure and processes of learning is the Information Processing model. This model is based on the analogy between the mind and the computer. In this model information is believed to be encoded, stored and retrieved and these three functions are seen to be critical to the way information is learnt (Atkinson & Shiffrin, 1968; Gagne, 1985).

The general cognitive model of learning and information processing is reflected in much of the literature on learning strategy instruction. Weinstein and Meyer (1986) suggest that the use of particular strategies can affect the encoding process, which in turn affects the learning outcome and performance. Cognitive psychologists also tend to stress the importance of students' perceptions of the usefulness of various strategies as the key factor in students' willingness to use them. Research has shown that teaching students to recognise the value of using appropriate strategies, in addition to teaching the strategies themselves, helps to motivate students to use them. Teaching both the use of strategies and the strategies themselves, is referred to as teaching both the *will* and the *skill* (Ghatala, 1985; McCombs & Marzano, 1990; Pintrich & Johnson, 1990).

Another cognitive model, namely Constructivism, emphasises the active role of the learner in building understanding and making sense of information. While information processing theorists believe that learners actively construct knowledge, the constructivists take the idea of knowledge construction further (Derry, 1992). In addition, Social Constructivist approaches contend that learning is inherently social and embedded in a particular cultural setting. This approach supports Vygotsky's views, emphasising the importance of social interaction and negotiation in learning (Woolfolk, 1995).

The way in which thinking and learning develop with age is best represented by Piaget. His stage theory of cognitive development proposes that a learner's thinking processes gradually become more complex and sophisticated. As learners make sense of their world, the information they gather is organised and new schemes are developed. Behaviour also becomes more sophisticated and better suited to the environment (Piaget, 1977).

Cognitive perspectives are evident in a large number of the learning strategies selected for use in the learning support program developed in the present study. Firstly, **rehearsal strategies**, involving the tactics of, reading, underlining, creating mnemonics, reciting or naming of information to be learned, were included in the program. While Pintrich, Smith, Garcia and McKeachie (1991, p. 19) suggest that the use of rehearsal is best for "simple tasks and activation of information in working memory", rehearsal was seen in the learning support program developed in the present study as a critical first order strategy in students' overall learning strategy use. Recent research suggests that the use of rehearsal strategies, for example repeating and memorising information, and learning for understanding, are linked, with "memorisation preceding understanding" (Martin, Watkins and Tang cited by Chalmers & Volet, 1997, p. 89). In addition, rehearsal strategies were specifically included in the program because students had to master a complex body of unfamiliar knowledge in a short space for time, and it was, therefore, considered important for them to focus initially on familiarising themselves with the subject matter. Only once they had mastered the basic ideas of the new subject was it considered appropriate for them to include higher level intentions such as grouping, organising and integrating ideas into higher order structures (Schmeck, 1983; Shuell, 1990). Students were taught, however, to go beyond the use of rehearsal strategies only, because most educators agree that the aim of teaching is to help students produce lasting learning gains (Kirkpatrick, et al., 1993).

Secondly, **elaboration strategies**, which assist students to move information into long-term memory by connecting and integrating it with prior knowledge, were also included in the learning support program because, as mentioned, rehearsal strategies

do not help students construct internal connections or integrate information with prior knowledge (Pintrich, et al., 1991). Strategies that result in more meaningful learning and a deeper understanding of the content were, therefore, included in the program. To this end the role of paraphrasing, specifically writing in students' own words, and actively relating information to what is already known were addressed. Students were encouraged to make summaries of the weekly readings, and were specifically asked to make summaries prior to each of three short answer tests. Summaries were discussed in class. In addition, a well documented elaboration strategy namely, reciprocal teaching, was also used. Time was set in class for students to teach each other specific content areas using this strategy (Campione, Shapiro & Brown, 1995; Palincsar & Brown, 1984; Paris & Winograd, 1990; Pintrich, et al., 1991).

Thirdly, **organisation strategies**, specifically concept-mapping and creating hierarchical outlines of each chapter's content, were included to help students to select appropriate information and construct connections between information learned. Students were also encouraged to incorporate information from the weekly readings, lectures and tutorials. There is recent empirical evidence that teaching students concept mapping has positive effects on their academic performance (Hadwin & Winne, 1996).

Fourthly, the inclusion of **metacognitive strategies** was central to the learning support program because effective learners are metacognitive about their learning in the sense that they are more aware and know more about their learning, and also appear to plan, monitor and adapt their learning regularly (Brown & Langer, 1990; Paris & Winograd, 1990; Weinstein, 1987; Worrell, 1990; Zimmerman, Greenberg, & Weinstein, 1994). In terms of specific metacognitive strategies, students were encouraged to plan, monitor and adapt their learning by skim reading material, asking themselves questions about the material being learnt, scribbling keywords in the text's margins (or in a notebook), determining which concepts they did not understand well, checking their reading speeds, and monitoring their comprehension. Most importantly, they were encouraged to fine-tune or adapt their strategies when necessary. A metacognitive reading strategy, the PQ4R (Thomas & Robinson, 1972), was included,

with students practising the strategy in class using their Educational Psychology textbook. On a more global level, students were encouraged to plan, monitor and evaluate their learning behaviour. Again, time was set aside in class for students specifically to discuss the strategies they used when studying for the tests and also to adapt and modify these where necessary. In one activity, students, working in groups, were asked to discuss the strategies which they used when studying for the first test, then to make a summary overhead transparency and to present their group's learning strategies to the class. Also, at the end of each tutorial, students were encouraged to reflect on what they had learnt, and were specifically asked by the instructor "What did you learn today?". Students were invited or volunteered to share their learning outcomes with the class. The goal setting activity described earlier also encouraged students to plan, monitor, and evaluate their learning behaviour, increasing their awareness and assisting them to orchestrate their learning.

Small group learning activities were used extensively to teach both the subject content and the components of the learning support program. Small group work was chosen because it allowed students to assume more control of their learning, which has been shown to encourage task involvement (McKeachie, et al., 1986). Also, students' learning, particularly for lower ability students, is enhanced by working with their peers (Meece, 1991). Thus, in order to encourage students to focus more on their learning efforts and to foster a positive affective climate, a cooperative class structure was fostered (Ames, 1992).

Thus, social constructivist views were apparent in the overall design and implementation of the learning support program. Specifically, the selection of certain strategies and the approach adopted to teach them all encouraged group interaction, open discussion and personal reflection, and placed emphasis on the learner as an active participant.

Behavioural perspective

The behavioural approach is evident in both the design and implementation of the learning support program. Behavioural researchers have produced one of the largest and most influential bodies of research on learning, notably on self-management. They believe that to encourage existing behaviours or to teach new ones, the behaviours need to be reinforced. Studies of self-reinforcement, self-instruction and self-recording have been used in a wide variety of areas of human functioning. These have demonstrated that teaching self-instructions and accompanying nonverbal actions provides an effective way of improving functioning in a wide variety of academic areas (Zimmerman & Schunk, 1989). Recent applications of behavioural views of learning emphasise self-management (Woolfolk, 1995). Specifically, applied behaviour modification focuses on helping students to gain control of their own learning by using goal setting, recording and evaluating progress, and self-reinforcement.

To encourage students to engage in learning and to persist in using the strategies taught, both in and out of class, **reinforcement** in the form of rewards was used. In class, "fun" rewards in the form of sweets were provided when students judged they had mastered the set tasks. It is often reported that instructor praise and reward increases learning (see for example, Wittrock, 1986). Further, researchers suggest that instructors implementing learning strategy programs must confront the issue of getting students to actually use the strategies taught (McKeachie, et al., 1986). In addition, research suggests that, only once students have used the strategies taught, do they become aware of the associated learning gains and that adequate practice in the strategies often promotes their use (Pressley, et al., 1990). While Kohn (1993) believes that using rewards is essentially a technique for controlling people, Chance (1993) suggests that students learn best in a positive environment, and if student learning and performance are rewarded by the use of praise or other reinforcers, a positive learning environment is created. Furthermore, when rewards provide information about the learner's performance or are used to indicate that the learner's behaviour is valued, then the rewards are believed to boost confidence and increase

interest in the task (Wittrock, 1986). This is the belief that underpinned the use of rewards in the present study.

Also included in the learning support program was an applied behavioural approach incorporating a self-management strategy, namely, **goal setting**. Goal setting was specifically chosen because having clear, realistic, and personally relevant learning goals has been found to be positively related to self-efficacy, effort expenditure, persistence and academic performance (Schunk, 1990; Schunk, 1991; Zimmerman, 1990). Furthermore, goals assist students to plan their learning and influence their motivation to learn and thus, the learning strategies they select and use (Biggs, 1987). Moreover, goal attainment provides learners with an indication of their task mastery (Zimmerman, 1990) and thus, problem-solving efforts are sustained by the positive feelings derived from mastery goal achievement (Meece, 1991).

In the present study, time was set aside in class for students to set individual learning goals, record, monitor and evaluate their goals, and to reward themselves when their goals were met. Students were specifically instructed on the value of setting intrinsic learning-oriented goals that focus on mastery and understanding of new concepts, as opposed to extrinsic, ego-oriented goals which generally focus on performance based on grades and competition (Meece, 1991; Pintrich, De Groot & Garcia, 1992). Mastery goals were specifically focussed on because research has shown that they facilitate students' use of learning strategies and adaptive motivational patterns (Ames & Archer, 1988). Further, students were encouraged to set specific, proximal and challenging goals, because setting these types of goals has been found to be effective in influencing students' self-regulatory behaviours (Zimmerman, 1990). Specific attention was paid to ensuring that students had control over the goals they were setting and that they rewarded their goal achievement privately. Students' feelings of competence and interest in learning may be negatively affected when goals are viewed as externally imposed and when recognition of goal achievement is made in public (Ames, 1992).

The goal setting strategy followed the guidelines for instituting a self-management program, namely, introducing the system in a positive way, helping students to learn to set appropriate goals, providing a way for students to record and evaluate their progress, checking the accuracy of student records from time to time, and encouraging them to develop forms of self-reinforcement (Woolfolk, 1995). Research has shown that, if students are able to set up simple plans to reward themselves when goals have been accomplished, then this helps them to maintain their involvement in the task, which may result in better performance (McKeachie, et al., 1986). Including a self-management component when teaching learning strategies also responds to the claim made by a growing number of cognitive and educational psychologists that self-management is a necessary component of effective strategy instruction (Volet, 1991).

Social learning perspective

A social learning or social cognitive perspective is also evident in the literature on learning and teaching. This perspective expands the behavioural view to include the study of cognitive processes that cannot be directly observed, such as expectations, thoughts and beliefs. Social cognitive theorists, notably Bandura (1986), give special attention to self-efficacy, that is, students' beliefs about their ability to be successful learners. In this theory, environmental events, personal factors and behaviour are seen as interacting, each influencing the others during learning, in a process known as reciprocal determinism.

According to social cognitive theorists, one factor overlooked by the traditional behavioural view is the powerful effect that modelling and imitation have on learning. Social learning theorists have shown that self-reinforcement processes can be acquired and modified through observation of a model (see for example Bandura, Grusec & Menlove and Bandura & Kupers cited by Zimmerman & Pons, 1986 p. 615). Those working from this perspective now suggest that modelling can provide learners with essential cognitive rules for self-regulating their behaviour. Modelling, when applied correctly, paying particular attention to reinforcement and practice, has been shown to be an effective and efficient means of teaching new behaviour (Bandura, 1986;

Schunk, 1993). In the present study, in line with the social learning theorists' perspectives, a great deal of importance was attached to the role of **modelling** in learning when implementing the learning support program. The teaching of many of the strategies involved modelling by the instructor and the students.

Particular attention was also paid to reinforcement and **practice with feedback**, with the instructor specifically setting time aside in class for students to practise new behaviours (Bandura, 1986; Zimmerman, 1989b; Zimmerman, 1990). For example, in order to help students manage their first writing task, they were given the opportunity to submit a draft copy of the theoretical section of the report. Students were scaffolded by having the essay's criteria clearly outlined, the mark allocation made clear, reference books placed on closed reserve, being shown how to complete the task, and being given class time to work on their draft. Drafts were marked and detailed feedback was given using a feedback sheet (see Appendix 3.1). Positive comments were made directly on the drafts, while the feedback sheet contained a numbered list of errors and suggestions for improvement. Numbers corresponding to errors and suggestions were placed in the body or margins of student drafts. The feedback sheet was generated from the essay requirements as well as from an initial reading of the drafts which revealed commonly recurring errors. This way of providing feedback had the advantage of making students refer to the feedback sheet for an explanation, which was more detailed than the kinds of comments students typically get at the end of an assignment. Students could refer to the feedback when they needed it and were, therefore, not overwhelmed by too many negative comments. Limiting written comments on drafts to positive ones was aimed at boosting students' confidence. The feedback method was explained to students and they were encouraged to use the feedback on their drafts to revise their reports. The main reasons for requiring a draft included the well established finding that effective writers, when compared to novice writers, are more likely to use drafts in refining their writing (Hayes & Flower, 1986) and that recent research suggests that the most influential strategies to help students improve their writing, learn course material or improve problem-solving abilities, are firstly, timely feedback on written work and

secondly, opportunities for students to hand in drafts of their written work (Hilgers, Bayer, Stitt-Bergh, & Taniguchi, 1995).

A number of **resource management strategies** drawn from social learning theory and research involving environmental structuring, self-consequences and self-evaluating were also included (Zimmerman & Pons, 1986). Specifically, at the beginning of the semester, students were given a calendar and time was set aside in class for them to complete it, noting due dates for all their assignments and other learning activities. Students were encouraged to refer to the calendar regularly and to plan their study and completion of assignments taking into consideration all the demands on their time. Students were given a handout on "How to do well at university" (see Appendix 3.2) and time was set aside in class for them to discuss it in groups. After the mid-semester break, students revised their calendars and completed an "Ed101 tasks to be completed" list (see Appendix 3.3) in class. In addition, they were encouraged to reward themselves when they had learned the material or when they had completed tasks on their list. This approach was derived from social learning theory which suggests that obtaining information about positive changes in self-efficacy during learning is critical to promoting self-motivation (Zimmerman, 1990). The instructor also reminded students on a weekly basis of work to be completed and modelled good time management strategies. Time management was included because research has shown that well developed time-management practices play a role in academic performance. Specifically, the following sequence has been shown to maximise productivity: setting goals, generating tasks and subtasks from the goals, prioritising the tasks, listing the tasks on a "to-do" list, scheduling the tasks, and then carrying out the tasks (Britton & Tesser, 1991).

As a further dimension of the learning support program, prior to the examination, students were given a handout covering examination strategies (see Appendix 3.4) which was read and discussed in class, in order to model effective examination strategies. Verbal persuasion was, therefore, used to encourage students to use effective learning strategies. Verbal persuasion, when combined with social modelling, has been found to be a powerful medium through which students can learn a wide

variety of cognitive, affective and academic skills (Zimmerman, 1989b). Later, before the final examination, students discussed the examination strategies which they used to help them to learn for understanding and also shared their tips for improving their motivation and effort regulation. The modelling of effective strategies by peers was included because research suggests that such modelling can promote students' self-efficacy (even those students whose experiences have led them to doubt their self-efficacy) (Bandura, 1986). Students were also actively encouraged to work in groups when learning, and it was suggested that they should seek help from each other or the instructor when they needed assistance. Seeking social support was overtly encouraged because social learning researchers have shown that self-initiated efforts to obtain direct assistance from instructors, peers or adults is a good predictor of academic performance and that students can be taught or prompted to use these strategies. Moreover, seeking support enables students to increase their personal control over their own learning behaviour and immediate environment (Zimmerman, 1989b).

Students were also prompted to **monitor and record their feelings** (including feelings of confidence and worry) during the semester. They were provided with a template and time was set aside in class for them to monitor and record their emotional reactions to the course and the program as a whole (see Appendix 3.5). Thus, facilitating self-observation, or the process of self-monitoring, was a way of getting students to become more aware of their feelings so that they could take action to deal with them if needed. This self-observation component was included in the learning support program because there is extensive evidence that prompting students to keep records of their actions or reactions may positively affect their learning, motivation, and self-efficacy (Schunk cited by Zimmerman, 1990). Moreover, if students are able to control their affect (particularly anxiety), and experience high self-perceptions of efficacy, they are more likely to use metacognitive processes and set longer-term goals (Zimmerman, 1990).

Summary of approach adopted and strategies selected

Overall, in the design of the approach adopted and strategies selected in the present study, the three perspectives namely, Cognitive, Behavioural and Social learning, were seen as existing side-by-side, each serving different purposes, bringing out different aspects of reality and adding to a holistic perspective of what was occurring in the classroom. Including multiple theoretical perspectives, therefore, took into account the complexity of classroom life particularly when assisting students to learn.

In relation to the strategies selected, the learning support program focused on the role of goals for learning, self-management, cognitive learning strategies (rehearsal, elaboration, organisation), and metacognitive learning strategies (planning, monitoring, evaluating and reflecting). Throughout the program, the instructor endeavoured to ensure that students were informed and active participants in their own learning. Further, the approach adopted to teach the learning strategies used modelling, group work, open discussion, personal reflection and self-reinforcement. The instructor also tried to create a pleasant classroom climate which was non-threatening, supportive, and based on mutual respect, and which encouraged collaborative learning. The instructor carefully selected learning tasks and learning strategies so that they were relevant to course content and students' future work as teachers. Learning support was provided on a "just in time" basis, that is, when students needed it to help them complete set tasks such as completing a study calendar at the beginning of each semester, setting goals each week for tasks to be completed, submitting drafts of their writing tasks, and completing summaries in preparation for the short answer tests. The instructor also adopted a directive approach, regularly monitoring student use of learning and study strategies and setting specific out-of-class tasks. Throughout the implementation of the learning support program, the instructor was also reflective and endeavoured to be sensitive and responsive to student feedback.

Phase 2: Implementation of learning support program

The learning support program described above was implemented by the researcher in two Semester 1 Educational Psychology classes. The participants and the context of the study are described in the following sections.

Participants

The 152 participants in the study were first year Education students enrolled full time in three undergraduate programs – Early Childhood, Primary and Secondary Education – in the Faculty of Education at Curtin University of Technology, a large Australian higher education institution. At the time of the study, students in the Early Childhood and Primary programs were enrolled in a three year degree program while students in the Secondary program were enrolled in a four year degree program. All first year students who were enrolled in the compulsory core course in Educational Psychology, Ed101 Growth and Development, participated in the study. Students, generally from an Australian background, lived locally within the geographic area of the university. Some students were from rural areas living away from home for the first time. The profile of the group is discussed below.

Gender and area of enrolment

Of the cohort, 134 (88%) were female and 18 (12%) were male. Fifty-one (34%) were enrolled in the Early Childhood Education program, 60 (39%) were enrolled in the Primary Education program and 41 (27%) were enrolled in the Secondary Education program. The distribution of students by gender and program is presented in Table 3.1.

Table 3.1
Number and percentage (rounded to nearest whole number and in brackets) distribution of students by gender and program

	Gender		
Program	**Males**	**Females**	**Total**
Early Childhood	1 (1)	50 (33)	51 (34)
Primary	6 (4)	54 (36)	60 (39)
Secondary	11 (7)	30 (19)	41 (27)
	18 (12)	134 (88)	152 (100)

Age range and educational background

Students' ages ranged from 17 to 45 years ($M = 20.42$, $SD = 5.85$) and 80.5% were younger than 21. Approximately 79% of the cohort were school leavers gaining entry to the Faculty of Education based on their Tertiary Entrance Score (TES), while approximately 21% of the total cohort were mature age students. The University classifies any student who has turned 21 by the commencement of the academic year as a mature-age student. Generally, the older mature age students enter the Faculty of Education through either the Alternate Tertiary Admissions Entrance (ATEA) or by being accepted into the University by the University's Matriculation Committee.

Participation of students

At the beginning of the semester all students ($N = 152$) enrolled in Ed101 were required to sign up for a tutorial group, selecting a class which suited their timetable. There were six tutorial groups each containing approximately 20 - 25 students. On the basis of timetable allocations, as determined by the staffing coordinator, each tutorial group was assigned to one of three instructors. Of the three instructors, one was allocated three classes, one allocated one class, and one (the researcher), was allocated two classes. Permission was obtained to implement the learning support program with the two classes ($n = 47$) allocated to the researcher. These two classes comprised the learning support group (referred to as LSG1 from here on). The program, as already described, consisted of structured support to help students to be effective learners in the context of Ed101. See Appendix 3.6 for an outline of the

weekly implementation details of the learning support program. The remaining four classes (n = 105) were taught conventionally by the other two instructors and were called the regular group (referred to as RG1 from here on).

Student attrition

Of the 47 students in the LSG1, two (4%) withdrew by the University census date of 31 March, leaving 45 students in the group for the remainder of the semester. Of the 105 students in the RG1, 12 (11%) withdrew by the end of Semester 1, leaving 93 students in the group.

Context

The Ed101 course involved three hours of contact time per week – a one hour lecture and a two hour tutorial. While student attendance at the lecture was not compulsory, attendance at the tutorial was. Instructors kept an attendance register and students who missed a class were required to submit a 250 word summary of the main points from the required reading for the session missed. Lectures covered the central subject content of Growth and Development and were presented by the three Educational Psychology instructors or by guest lecturers. The central content covered included the following topics, cognitive development, language development, theories of moral, social and personal development, physical development, intelligence, special needs specifically, development outside the normal range, and gender. Tutorial sessions were used for activities dealing with the designated topic set for the week (which normally expanded on the ideas presented in the lecture and were supported by the prescribed readings from the set textbook), and for completion of the short answer tests.

The semester consisted of 13 teaching weeks, one teaching practice week (with students going into local schools to obtain classroom based teaching experience) and one week free of class contact. Assessment comprised two written project reports (one worth 25 marks and the other worth 15), three short answer tests worth 10

marks each, and a final multiple choice test worth 30 marks (see Appendix 3.7 for examples of the short answer test questions and multiple choice test items).

In the first tutorial, students in the LSG1 were informed that the instructor was integrating learning support in the tutorial classes, and that, based on the literature, the method should be at least as effective if not better than the more traditional methods of teaching content only (Volet, 1991). Students were given the opportunity to change to another class if they did not wish to participate in the learning support program. All, however, agreed to be involved in the learning support program.

As part of the Faculty of Education's commitment to supporting student writing needs, all students participated in an integrated writing support program developed by an external instructor (Samson, 1996). Students' major written assignments for Ed101 provided the focus of the writing content with the instructional strategies based on the Five-by-Three Writing Model (Samson & Radloff, 1992). The beliefs and practices underpinning the program were founded on the research literature, particularly that of Bereiter and Scardamalia (1987), Biggs (1988), Hayes and Flower (1986), Humes (1983), and Huot (1990), as well as the information gained from the analysis of university students' writing (Samson, 1996).

The approach adopted in the writing support program was compatible with the approach adopted in the learning support program, that is, students were informed learners, writing support was in-context, and metacognitive strategies were applied. Key components of the integrated writing support were explicit teaching of the processes and structure of writing, group work and feedback on a draft essay (submission of the draft was worth 5%).

The integrated writing program was implemented by the researcher in the two LSG1 classes and by the external instructor in the four RG1 classes. Of the 13 teaching weeks in the semester, four were allocated to the integrated writing program, giving a total of eight hours of writing support. The four writing sessions were dispersed across the semester and were taught in the second, fourth, sixth and tenth weeks.

whereas the drafts of the students in the LSG1 classes were marked by the researcher as the discipline instructor. Figure 3.2 summarises the groups and the learning context in Semester 1, 1995.

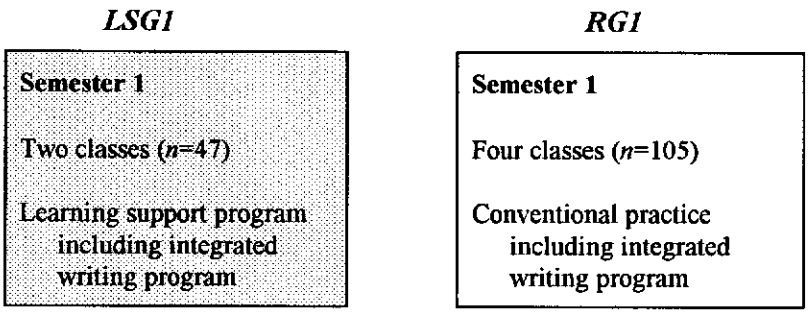


Figure 3.2 LSG1 and RG1 in Semester 1, 1995.

Phase 2: Evaluation of learning support program

In this section the data gathering approach, the research design, the instruments used, and the procedure for administering them in evaluating the learning support program, are described.

Data gathering approach

To evaluate the learning support program developed in Phase 1, a combination of both quantitative and qualitative methodologies was used. Combining qualitative and quantitative approaches is a practice that is now generally accepted and advocated by educational researchers (Henwood & Nicolson, 1995; Mathison, 1988; Parer & Benson, 1990; Shulman, 1988) because each method can provide complementary data. While quantitative approaches emphasise relative objectivity and generalisability, qualitative approaches emphasise the importance of more subjective experiences and the individual case (Burns, 1990). Qualitative descriptions can, therefore, suggest "possible relationship[s], causes, effects and even dynamic processes..." in educational settings, show the subtleties in student behaviour and responses, "illuminate reasons for action, and provide in-depth information on teacher interpretations and teaching

style", revealing subtleties and complexities that go undetected through the use of quantitative measures alone (Burns, 1990, p. 12).

Moreover, exclusive reliance on one method may bias or distort the researcher's perspective. Combining quantitative and qualitative approaches offers alternative ways of addressing research questions, allowing a wider range of data to be collected and providing scope for in-depth data analysis. It also allows for triangulation, which increases the validity of research findings by overcoming the weaknesses or biases inherent in the use of a single method or single instrument (Cohen & Manion, 1989; Denzin, 1988). Therefore, using a diversity of approaches within a single research study such as this offered different perspectives, answered different questions and painted a fuller picture than would otherwise have been possible. In this evaluation, quantitative data were gathered through questionnaires and qualitative data were gathered by interviews, open-ended questions on selected questionnaires, and a Reflective Diary.

Research design

Representative design

A representative design, which reflects accurately real-life learning environments and the characteristics of learners, was used (Snow, 1974). This approach was chosen because educational researchers have criticised traditional or systematic experimental designs for their artificiality and lack of generalisability and their association with artificial learning situations (Borg & Gall, 1989)

The evaluation was designed to reflect a number of the assumptions underlying representative designs. Firstly, the characteristics of natural environments are complex and interrelated and it is, therefore, not possible to vary one environmental characteristic and hold others constant. Secondly, humans are active processors of information and, as such, they do not merely react passively to experimental treatments. Thirdly, the normal range of human behaviour can only be exhibited if the

learner is allowed to act naturally. Finally, any experimental intervention is likely to affect the learner in complex ways.

While Snow (1974) acknowledges that it is very difficult to achieve true representative designs in education, he suggests compromises that will make experiments more representative. He recommends conducting the research in a natural setting, that is, the environment to which the findings may be generalised; acknowledging the human subjects as active learners; incorporating as many environmental variations into the design as possible; observing learner behaviour; observing the social context in which the experiment is being conducted; preparing students well for the experimental task; and incorporating a control group that allows students to use their customary approaches to learning, thus providing a naturalistic baseline against which the behaviour and learning of the experimental group can be evaluated. The present study attempted, therefore, to reflect these assumptions about the learner and the learning environment by:

- conducting the evaluation in a natural classroom setting (that is the environment to which the findings were to be generalised);
- acknowledging the participants as active learners and allowing them to act naturally so that their normal range of learning behaviours could be exhibited;
- assuming that any teaching was likely to affect the learner;
- believing that both the teaching and teaching context were likely to affect learners in complex and interrelated ways;
- observing and collecting data about student behaviour;
- taking into consideration the social context in which the study took place; and
- including a comparison group from which a naturalistic learning baseline could be determined.

Nonequivalent comparison-group design

A non-equivalent design, probably the most widely used quasi-experimental design in educational research, was used in the present study (Borg & Gall, 1989; Cohen & Manion, 1989). This design was chosen because random assignment of subjects into

the LSG1 and RG1 was not possible. In addition, as is often the case in educational research, an educational innovation was compared with conventional practice. The LSG1 and RG1 did not represent experimental and control groups because both participated in a teaching program. Therefore, the RG1 was referred to as a comparison rather than as a control group.

A group design, as opposed to a single-subject design, was selected because the investigation focussed on the population of students and because the teaching method and curriculum materials were designed for a group of students. Using a group design was considered to yield more useful data than a single-subject design (Borg & Gall, 1989).

For the purpose of gaining comparative data only, a pretest and a posttest were administered to both groups in Semester 1, 1995. The pre and posttests gathered data on students' motivational orientations, learning strategies and affective reactions. A number of studies on student learning have collected quantitative data about student learning on one occasion only assuming that students' learning is stable over time and across courses. This assumption is not supported by research (see for example, Chalmers & Volet, 1992). Therefore, in this study, questionnaires, which as mentioned collected data on students' motivational orientations, learning strategies and affective reactions specific to a particular course of study, were administered on a number of occasions, as outlined later in this chapter.

Instruments

The instruments used, and how they were administered to collect the data in Phase 2 of the study, are described in the following sections.

Motivated Strategies for Learning Questionnaire (MSLQ)

In order to assess the impact of the learning support program on students' motivational orientations and their learning strategy use, the Motivated Strategies for Learning Questionnaire (MSLQ), a standardised 81 item instrument (Pintrich, et al., 1991) was used. The MSLQ is a self-report questionnaire consisting of two sections – Motivation and Learning strategies – designed to assess university students' motivational orientations and their use of different learning strategies while studying for a course at university (Pintrich, Smith, Garcia, & McKeachie, 1993).

The Motivation section of the MSLQ is made up of three scales namely, value component, expectancy component and affective component. The Learning Strategies section is also made up of three scales namely, cognitive, metacognitive, and resource management. Thus, the MSLQ provides profiles of learners in terms of their motivational orientations, (including value, expectancy and affective components) as well as in terms of their learning strategy use (specifically cognitive, metacognitive and resource management strategy use), in a specific course of study. Details of the scales and subscales and an example item for each subscale are presented in Table 3.2.

Table 3.2
The scales, subscales and examples of items in the Motivated Strategies for Learning Questionnaire (MSLQ)

Scale	Subscale	Item
Motivation		
Value component		
	intrinsic goal	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.
	extrinsic goal	Getting a good grade in this class is the most satisfying thing for me right now.
	task value	I like the subject matter of this course.
Expectancy component		
	control of learning	It is my own fault if I don't learn the material in this course.
	self-efficacy	I'm confident I can do an excellent job on the assignments and tests in this course.
Affective component		
	test anxiety	I have an uneasy, upset feeling when I take an exam.
Learning strategies		
Cognitive		
	rehearsal	When studying for this class, I practice saying the material to myself over and over.
	elaboration	When I study for this class, I pull together information from different sources, eg. lectures, readings, discussions.
	organisation	When I study the readings for this course I outline the material to help me organise my thoughts.
	critical thinking	I often find myself questioning things I hear or read in this course to decide if I find them convincing.
Metacognitive		
	metacognitive self-regulation	before I study new material thoroughly I often skim it to see how it is organised (planning).
		I ask myself questions to make sure I understand the material I have been studying in this class (monitoring).
		If course materials are difficult to understand I change the way I read the material (adapting).
Resource management		
	time and study	I make good use of my study time for this course.
	effort regulation	Even when course materials are dull and uninteresting, I manage to keep working until I finish.
	peer learning	When studying for this course, I often try to explain the material to a classmate or a friend.
	help-seeking	I ask the instructor to classify concepts I don't understand well.

The MSLQ is designed to be administered in class and takes approximately 20-30 minutes to complete. Students respond to each of the 81 items on a seven-point Likert scale from 1 (this item *is not at all true of me)* to 7 (this item is *very true of me)*. The MSLQ is scored by taking the mean of the items that make up that scale. For example, an individual's score for the cognitive subscale rehearsal, which has four items, would be computed by summing the four items and then taking the average of the score. Negatively worded items are reverse coded prior to an individual's score being computed. Thus, all statistics reported represent the positively worded versions of the items. Separate scores for each of the 15 sub-scales on the MSLQ are obtained, with a higher score 4, 5, 6, 7 being better than a lower score 1, 2 or 3, except for the test anxiety scale, where a high score means higher anxiety. The MSLQ subscales are designed to be modular and can be used together or singly, to fit specific needs.

The MSLQ has been under development informally since 1982 and formally since 1986 (Pintrich, et al., 1993). It has been used extensively by the developers with data being gathered from over 2500 students. The current version reflects more than 10 years of work, with data being subjected to the usual statistical and psychometric analyses, including internal reliability coefficient computation, factor analyses, and correlations with academic performance measures. Results of the analyses suggest that the MSLQ has relatively good reliability in terms of internal consistency, and given good results in confirmatory factor analyses, the general theoretical framework and the scales that measure it appear to be valid. Therefore, the six motivational and subscales and the nine learning strategies subscales represent a coherent conceptual and empirically validated framework for assessing students' motivation and use of learning strategies in the college classroom (Pintrich, et al., 1993). In terms of the predictive validity of the MSLQ, Pintrich, Smith, Garcia and McKeachie (1993, p. 812) state that while "individual course grades themselves are not very reliable measures of performance or learning", the MSLQ scale correlations with final grades are significant, albeit modest.

As outlined in Chapter 2, the MSLQ was specifically selected for use in the present study because the theoretical framework underpinning it is in keeping with current theories of student learning. Furthermore, as outlined above, the MSLQ represents a

useful, reliable and valid means for measuring university students' motivational orientations and use of learning strategies (Garcia & Pintrich, 1995; Gilles, 1994; Pintrich, 1989; Pintrich, et al., 1992; Pintrich & Johnson, 1990; Pintrich & Schrauben, 1992; Pintrich, et al., 1993).

The general aim of the present study was to explore university student learning in the context of a first year Educational Psychology course. The MSLQ facilitated this aim by providing specific information about the role of motivation and strategy use in learning in a specific course of study (Pintrich, et al., 1991). Further, the MSLQ is an ideal questionnaire to obtain the information required to answer specific questions about students' strategy use and their metacognitive skills.

Scores on the MSLQ were used to determine students' perceptions of their motivational orientations and learning strategy use at the beginning of the study and to measure any changes in students' reported motivational orientations and strategy use following a semester of study at university. They also provided a measure of students' perceptions of their motivational orientations and strategy use which were cross validated with their perceptions derived from other questionnaire responses and the interview data.

State-Trait Anxiety Inventory (STAI)

To obtain a measure of students' affect (a measure of a person's emotional response to any situation imaginary or real, for example, feelings of happiness, sadness, hostility), specifically anxiety (a specific affective factor that is associated with an unpleasant emotional state), the State-Trait Anxiety Inventory (STAI), a standardised 40 item instrument (Spielberger, 1983), was used. The inventory is a self-report instrument designed to measure state and trait anxiety and was developed for use with high school and university students and adults.

The STAI comprises two separate self-report scales. The state-anxiety scale consists of 20 statements that evaluate how respondents feel "*right now, at this moment*", while the trait-anxiety scale consists of 20 statements assessing how respondents

"*generally*" feel. The feelings evaluated by the STAI state -scale are apprehension, tension, nervousness, and worry.

The STAI is designed to be self-administering and normally takes about 10 minutes to complete. Students respond to each of the items on a four-point Likert scale from 1 (*almost never*) to 4 (*almost always*). Examples of items from each scale are provided in Table 3.3.

Table 3.3
Examples of items on the State-Trait Anxiety Inventory.

Scale	Item
State anxiety	
	I am relaxed
	I feel self-confident
	I am worried
	I feel confused
Trait anxiety	
	I feel satisfied with myself
	I am "calm, cool, and collected"
	I feel like a failure
	I feel that difficulties are piling up so that I cannot overcome them

The STAI is scored by adding the scores for the 20 items that make up each scale, taking into account that the scores are reversed for selected items (19 of the total 40). Scores for both the scales can vary from a minimum of 20 to a maximum of 80. Results of statistical analyses indicate that the scales are reliable with high internal consistency (Cronbach alphas uniformly above .90 for college students) and provide valid measures of state and trait anxiety (Spielberger, 1983).

The STAI has been used in more than 2000 studies, including studies in education, to assess the level of stress induced by real-life stressors such as important school tests, and found to be a sensitive indicator of changes in state anxiety experienced by individuals. It has also been used by researchers evaluating student learning at university, for example, in the learning strategies course offered at the University of Texas (Weinstein, 1988).

The STAI was selected for use in the present study because scores could be used to determine if participating in the learning support program had any influence on participants' anxiety. Since the program included strategies to assist students to manage their anxiety, the STAI was used as an indirect measure of the program's effectiveness. Furthermore, because the role of affect in learning needs further investigation, the STAI provided information about student affect and learning in general. As discussed in Chapter 2, a person's affective state plays an important role in the selection and acquisition of learning strategies. Moreover, possessing a good set of learning strategies and employing strategies to manage affect (such as positive self-talk, relaxation and breathing techniques), assists in the reduction of anxiety (Biggs & Moore, 1993; Weinstein & Mayer, 1986).

The STAI was used to obtain one measure of students' affect – specifically, anxiety. Students' scores on the STAI were cross-validated with their scores obtained from the Zuckerman Affect Adjective Checklist, allowing for the triangulation of the data.

Zuckerman's Affect Adjective Checklist (AACL)

Affect, including anxiety, was also measured using a version of Zuckerman's Affect Adjective Checklist (AACL) (Zuckerman, 1960) which contained modifications by Docking (1979).

The AACL is a self-report instrument consisting of 21 key words embedded in a total of 60 adjectives with various affective connotations, arranged in alphabetical order (see Table 3.4).

Table 3.4
Sixty adjectives showing the 20 embedded key words on the AACL.

absorbed	afraid (+)	aimless	ambitious	annoyed
aware	bored	calm (-)	careless	cautious
challenged	cheerful (-)	cheated	comfortable	confused
contented (-)	creative	curious	dedicated	desperate (+)
disappointed	efficient	entertained	excited	fearful (+)
fortunate	frightened (+)	happy (-)	hopeless	impatient
incapable	inspired	interested	joyful (-)	lazy
loving (-)	miserable	misplaced	nervous (+)	organised
overloaded	panicky (+)	pleasant (-)	pleased	productive
pushed	refreshed	regretful	rewarded	satisfied
secure (-)	serious	shaky (+)	steady(-)	tense (+)
terrified (+)	thoughtful (-)	upset (+)	weary	worried (+)

Respondents underline the words which describe how they generally feel about a particular subject (in this study, their Ed101 course). To obtain a measure of the respondent's anxiety, the 11 words designated positive are scored 1 if they are marked, and 0 if they are not marked. The 10 words designated negative are scored 0 if they are marked, and 1 if they are not. The possible range of scores is 0 to 20.

The AACL is well validated, has good concurrent validity and is reliable, with a test-retest coefficient of .83 (Fraser & Fisher, 1982; Zuckerman, 1960). The major advantage of using the instrument is that it can be completed easily and quickly, scored objectively, and adapted for varying time sets. The AACL provided data on students' general affect (their feelings about or emotional response to the Ed101 course) and was used to triangulate the data obtained from the STAI.

Structured Interview Schedule

An interview schedule designed to obtain information on first year students' learning in Ed101, was developed. The schedule was based on the schedule designed and developed to assess high school students' use of self-regulated learning strategies by Zimmerman and Pons (1986), previous research on students' learning at university (Cliff, 1995; Martin, Bowden, & Ramsden, 1989) and the researcher's experience of teaching Educational Psychology to first year university students.

Pilot interviews were conducted with two students who had completed Semester 1, 1995 and who had participated in the learning support program. Each participant was interviewed separately using a draft of the interview schedule. Participants were informed that the researcher was piloting the schedule and therefore sought their views on the schedule in particular, and the interview procedure in general. With the participants' permission, the interviews were tape-recorded. The pilot interviews provided an opportunity for the researcher to gain feedback on the interview schedule, to develop and modify the schedule and to practise and refine her interviewing skills. Based on the feedback from the participants, the interview schedule was modified. The order of questions was changed and a section where students could rate the specific strategies included in the learning support program on a scale from 1 - 4, with, 4 = of great value, 3 = of some value, 2 = of little value, and 1 = of no value, was included.

The final interview schedule focused on three main themes, namely, students' views about the instructional context, their views about the learning strategies they used when completing the assessed tasks, and, for students in the LSG1, their specific views about the learning strategies included in the learning support program (see Appendix 3.8 for the interview schedule used in Semester 1, 1995).

Obtaining specific details of first year students' learning strategy use, their views of the learning support provided, and of the learning context were important to the present study, since the main aim of the study was to expand current views on student learning at university. Details of students' strategy use were also specifically needed to assess accurately the effectiveness of the in-context learning support program. Furthermore, as part of the study included designing and implementing an expanded learning support program (described later in this chapter) in the Semester 2, students' views and perceptions made a valuable contribution to the design of the program. Also, since the study aimed to describe and explain the relationship between student learning behaviour and academic performance, detailed descriptions of students' learning behaviours were required.

Since the research questions for the present study were set in the context of students' everyday university learning experiences, interviews were an appropriate vehicle to allow for in-depth exploration of their learning perceptions and experiences.

While interview data can complement and extend data obtained using quantitative approaches, there are certain limitations to using interviews, specifically when seeking information about cognitive processes. In the personal world of the interviewer and interviewee, sources of personal bias are always present. Factors which may bias interview data include, firstly, a lack of awareness by the participants about the cognitive processes they are being asked to talk about; secondly, possible difficulties in remembering details of cognitive events due to the time interval between reporting and processing; thirdly, subjects glibly discussing processes that they do not understand or routinely use; fourthly, responses that indicate that the subjects are telling the interviewer what they think he/she wants to hear (Garner & Alexander, 1989); or, fifthly, responding in a way that indicates that they believe they are being "put on the spot" (Burns, 1990). Despite doubts and criticisms about people's abilities to report on their cognitive activities (Ericsson & Simon, 1980; Nisbett & Wilson, 1977), Volet (1991) highlights the need to include students' subjective evaluations of their learning, specifically when examining the effectiveness of new instructional approaches. She argues that adults can provide sensible and valuable information on their learning because they are capable of self-reflection and control over their own thinking and past experiences (as suggested by most adult learning theories) and because they have privileged access to their own thoughts.

Furthermore, interviews may be especially useful in research on teaching and learning. Solas (1992) for example urges researchers to go beyond making inferences about teaching and learning simply from observing instructor and student behaviours and suggests instead that data be obtained from the instructors and students themselves. After all, as he points out, their thinking influences their behaviour and "they are the only witnesses to their own thinking" (p. 205). In the area of learning strategy use, Garner (1988) states that "verbal-report data are particularly useful in that they give researchers a glimpse at covert strategic activity that is not accessible except as described by strategy users" (p. 63). In the area of self-regulated learning, Zimmerman

and Pons (1986) also advocate the use of interviews to obtain data on students' use of strategies, and their research suggests that an interview procedure provides reliable evidence concerning students' self-regulation reports and displays substantial correlation with academic performance. Furthermore, Assor (1992) in his review of research since 1982 on self-reporting, concludes that "self-reported appraisals of academic competence and efficacy have significant positive and linear relations to future achievement-related behaviors and performance" (p. 34), and that "there is no empirical justification for viewing self-reported appraisals of academic competence and efficacy as invalid measures of performance affecting self-appraisals" (p. 42).

The design of the evaluation in the present study attempted to deal with the limitations of self-reporting in the following ways.

- The interviews were conducted as soon as possible after the semester in order to reduce the time interval between strategy use and the reporting of strategy use.
- The interviews were taped and transcribed verbatim in order to reduce selective recording and emphasis on statements that are in accordance with the researcher's biases or expectations.
- In interviews, participants were generally asked to report on specific events not on hypothetical situations in order to make recall easier and more accurate. Questions were therefore phrased in terms of specific tasks rather than in general terms.
- The participants were asked what they did and thought not why, in an attempt to limit the amount of inference required.
- The interviewer regularly checked that the participants understood what was being asked in an attempt to avoid participants answering the question they thought was asked.
- The interviewer stressed to participants that the interviews were conducted on the principle of confidentiality. They were assured, therefore, that anonymity in the published study was guaranteed, that data would only be used with their consent, and that reports would aim to reflect their judgments and perceptions of reality.
- The interviewer emphasised that there were no "right answers" and that participants' perceptions and views were being sought.

- The participants were prompted to provide full reports of their strategy use in a noncueing fashion and with minimal disruption to their thinking.
- Different methods and other sources of data (for instance, responses to questionnaire items, academic performance in terms of grades, examples of students' work) that do not share the same sources of error were included so that convergent data on the actual strategies used by the learners were collected.

Every attempt was made to reflect students' perceptions accurately. However, in a study such as this one, a full understanding of students' descriptions of their strategy use, and their beliefs and feelings, depends on reading the original transcripts. It is only through a detailed examination of the transcripts that students' experiences can be fully appreciated and interpreted (Entwistle, 1995).

Reflective Diary

One of the aims of the present study was to include the instructor's perspective when implementing and evaluating the learning support program, specifically her actions, experiences and perceptions as she implemented the learning support program (as outlined in Research Question 4). In order to achieve this aim, the researcher kept a Reflective Diary, documenting both what she did and her reactions as the learning support program was implemented.

As far as data collection is concerned, the Diary is classified as a narrative system. The narrative system is an open system, having no preset categories, with meaning viewed as context specific, sampling behaviours that occur within natural boundaries. Broad segments of events are recorded in written form, using everyday language. Narrative systems are used to provide detailed descriptions of observed phenomena, explain unfolding processes, identify generic principles and patterns of behaviour in specific situations, and chronicle longitudinal information about individuals, groups and activities (Evertson & Green, 1986).

Using a diary as a data gathering tool has a number of advantages. Erikson (1986) states that recording details of teaching and reflecting on them, "helps researchers and teachers to make the familiar strange and interesting again" (p. 121). What is happening can become visible and can be systematically documented. The recorder can ask questions and look at everyday experience as data for answering the questions. He/she can use the diary to seek disconfirming evidence, to consider discrepant cases, or to consider alternative interpretations. A diary can be used to reveal patterns in the instructor's activity, because such patterns are performed in action and are not conscious and thus, are difficult to recall. Furthermore, when considering the appropriateness of events, a detailed description in context is needed to make accurate judgements or to see to the meaning behind them. Erickson also suggests that classroom teachers are particularly well placed to observe, record and reflect on events in the classroom as "their role is not that of the participant observer who comes from the outside world to visit, but that of an unusually observant participant who deliberates inside the scene of action" (Erickson, 1986, p. 157).

There are, however, a number of factors to be considered when using self-observation. When observation is used to answer a stated question, it must be deliberate and systematic. The observer must understand the question of interest and the theoretical framework in order to record appropriate information. Thus, specific behaviours, events and processes must be frozen so that they can be examined systematically at a later stage. In addition, the process must be conscious, in order that it can be explicated so that others may assess its adequacy and understand it (Evertson & Green, 1986). As the observer is the first instrument of observation, "the tasks or objects selected, the observer's frame of reference, and the purpose of the observation, among other factors will influence what will be perceived, recorded, analysed and ultimately described by the observer" (Evertson & Green, 1986, p. 164).

The use of the Reflective Diary in the present study attempted to address the abovementioned factors in the following ways.

- The diary was used specifically to document instructor actions, experiences and perceptions, making use of the skills of observation, comparison, contrast and reflection in an especially systematic and deliberate way. Also, specific headings were used to further make recording more deliberate, systematic and accurate.
- Entries were made as soon as possible after the classroom episode so that accurate recall was maximised.
- Other outcomes of instructor behaviours (specifically students' perspectives and formal teaching appraisals), were used to triangulate the Diary data.

Diary entries were reflected on and are presented as a case study (see Chapters 4 and 5). According to Stake (1988), a case study is characterised by having some kind of outline or boundary which indicates its unity or totality. Therefore, a case study is not a specific technique, but rather a way of focussing on a "bounded" situation to discover patterns which have meaning to researchers and readers.

Additional, less formal, information about students' perceptions and their views of the learning strategies included in the learning support program was obtained using two researcher designed informal surveys. These are described below.

Perceptions of Being A First Year Student (Perceptions)

A survey, Perceptions of Being a First Year Student, was used to collect information on students' perceptions about their learning in Ed101 (see Appendix 3.9). The survey asked students how confident they felt about their performance in the course, how worried they felt about the course and why, and how much discomfort they experienced when attending lectures and tutorials, working on assignments, reading the textbook, and when studying for the course.

The survey was piloted with two groups of students in the Faculty of Education – a group of second year students ($n = 31$) and a group of third year students ($n = 22$) –

who had previously completed Ed101. The groups were informed that the researcher was piloting the survey and sought specific feedback on it. Based on the feedback from the students, two questions were deleted, and changes were made to the wording of some questions and to the order of the questions.

Since one of the aims of the study was to explore the particular role that affect plays in student learning at university, additional information on students' affect (particularly in relation to their feelings of confidence, worry, and discomfort) obtained in this way supported the aim. Furthermore, data obtained from the survey could be cross-validated with the data obtained from the Zuckerman Affect Adjective Checklist.

Student Appraisal of Teaching and Learning Strategies Survey (SATL)

To collect information on students' views about the specific learning strategies included in the in-context learning support program, students were asked to rate each of the strategies used (see Appendix 3.10 for example of survey). Data from the SATL provided the researcher with specific feedback on students' assessment of the learning support provided and was used to evaluate the learning support program implemented in Phase 2, specifically from the students' perspectives. Data were also used to cross validate information obtained through the interviews and, therefore, allowed for triangulation of data.

Procedure

When the data were collected and how each instrument was administered are described in this section.

Quantitative pre and post data were collected using the MSLQ and the STAI, at the beginning and end of Semester 1, 1995. During Semester 1 1995, students in the LSG1 completed the AACL and the Perceptions survey four times. At the end of the semester, LSG1 students completed the SATL, both LSG1 and RG1 students

completed the AACL and the Perceptions survey, and a sample of students from both the LSG1 and RG1, was interviewed. A Reflective Diary was kept by the instructor throughout Semester 1, 1995. Figure 3.3 outlines the data collection in Semester 1, 1995.

	LSG1		*RG1*
	Beginning of semester (pre)		**Beginning of semester (pre)**
	Questionnaires: MSLQ		Questionnaires: MSLQ
	STAI		STAI
	During semester		
	Reflective Diary		
	AACL		
n=45	Perceptions	*n*=93	
	End of semester (post)		**End of semester (post)**
	Questionnaires: MSLQ		Questionnaires: MSLQ
	STAI		STAI
	AACL		AACL
	Perceptions		Perceptions
	SATL		
	Interviews: 15 Structured		Interviews: 6 Structured
	Other: Achievement scores		Other: Achievement scores

Figure 3.3 Outline of data collection in Semester 1, 1995 ($N = 138$).

All instruments, except the AACL and Perceptions survey, were administered by the researcher in the tutorial sessions with time being specifically set aside for students to complete them. The instruments not administered in the tutorial sessions were administered to the whole group after they completed the final examination. Prior to administering the questionnaires, students' participation was always sought, with the researcher stressing that participation was voluntary and that any student had the right to refuse participation. Confidentiality and anonymity in any report and the published study, were also assured. Specifically, before students completed the MSLQ and STAI questionnaires they were asked to read a letter (see Appendix 3.11) which outlined the research, sought their participation and promised to provide them with feedback. On completing each questionnaire, students were thanked for their participation.

At the end of the semester, 21 students (15 from the LSG1 and six from the RG1) were invited by personal letter to an interview where their views on learning at university and their personal learning experiences, were sought. The group was representative of students whose metacognitive score on the MSLQ increased, decreased or remained static. The metacognition scale was used to select interview participants because metacognition was seen as a critical aspect of learning. For the purpose of gaining comparative data only, students from the RG1 were included and since the main aim was to obtain detailed data on students who had participated in the learning support program, fewer students from the RG1 were interviewed.

Interviews took place in the researcher's office, with each interview taking approximately 45 minutes. At the outset of each interview, following the interviewing protocols outlined by Merriam (1988), the interviewer's motives, intentions and purpose were discussed with the participants. They were thanked for agreeing to participate, informed that their opinions, perceptions, thoughts and ideas were valued and much appreciated, and reassured that all data collected were confidential and that their names would not be used in any published report. With the permission of the interviewees, all interviews were taped.

The interview was intended to be a "managed conversation" that aimed to bring out each student's understanding (White & Gunstone, 1992). Rapport was established and the interviewer did her best to create a pleasant atmosphere and to keep the interviewee talking without leading him/her or being judgmental. Specific attention was paid to creating a relaxed conversational atmosphere since it has been found that this style is most likely to elicit the trust and confidence necessary for yielding elaborate, subtle and valid data (Le Compte & Preissle, 1993). Students' honesty, openness and willingness to share their views was evident, with a number of students commenting that they enjoyed the interviews, and that they really benefited from them as they made them reflect on the way they studied. Furthermore, students felt comfortable enough to speak freely. Many students made comments that were very sensitive and personal, revealing their own hopes, fears and aspirations, commenting critically on certain courses and lecturers, and on the positive and negative ways parents and other members of their family had impacted on their study. After the

interview, students received a personal note thanking them for their participation (see Appendix 3.12).

The researcher kept the Reflective Diary throughout the implementation of the learning support program. Entries were made after each teaching session and included details of the strategies used, how they were used, and student and instructor reactions to these.

Phase 3: Analysis of data

The quantitative and qualitative data collected during Phase 2 of the study were analysed in Phase 3. In order to address the specific research questions presented in Chapter 1, a number of procedures were used to analyse the data. These are described in the next sections.

Quantitative analysis

Students' responses to all questionnaires administered during Semester 1, 1995 were entered into data files. Demographic data, student achievement scores and the data files containing participants' responses to the MSLQ and the STAI at the beginning and end of Semester 1 were then entered into a spreadsheet. Responses were matched, so that only data from students who had completed both questionnaires were used in the analysis. This resulted in 128 (113 female and 15 male) matched pairs. The matched data were entered into an SPSS data file and scored using the standard scoring procedures as outlined in the MSLQ and STAI manuals (Pintrich, et al., 1991; Spielberger, 1983). The number of MSLQ and STAI questionnaires included in the quantitative analysis is shown in Figure 3.4.

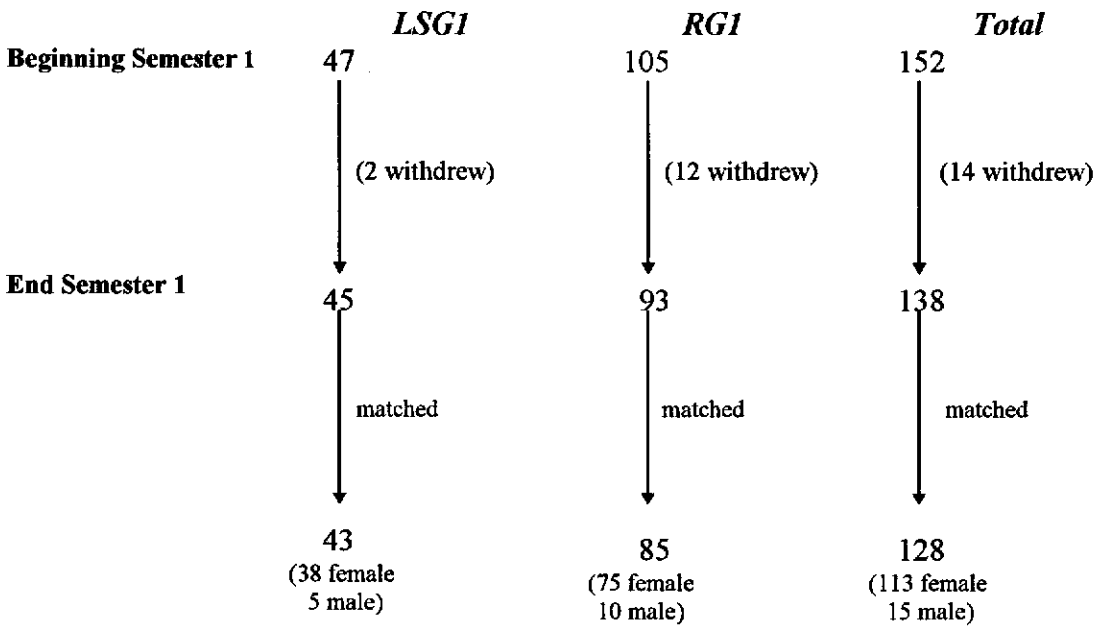


Figure 3.4 The number of MSLQ and STAI questionnaires included in the final analysis of the data collected during Phase 2 of the study.

These sets of data were then statistically analysed. All statistics including means, frequencies, percentages, standard deviations, *t*-scores, *F*-scores, Etas and correlation coefficients were obtained using the SPSS for windows statistical package version 6.0 (SPSS, 1993).

The AACL, Perceptions and the SATL questionnaires were entered into separate SPSS data files and analysed using SPSS in Phase 5 of the study. However, in order to inform further design of the learning support program in Phase 4, the AACL and the Perceptions questionnaire responses were all read by the researcher in Phase 3 of the study. The Phase 3 analysis of selected qualitative data, including the development of the coding categories for the interview data, is described in the next section.

Qualitative Analysis

Tape-recorded interviews were transcribed for all participants. The transcripts were coded and analysed by the researcher using Q.S.R. NUD•IST 3.0.4 (Non-numerical

Unstructured Data Indexing, Searching and Theorising) for Windows, a software package for qualitative analysis of unstructured data.

NUD•IST has been very favourably evaluated and is described as "conceptually sound", "user friendly" and "one of the best thought out programs around" (Weitzman & Miles, 1995, pp. 238, 239). Moreover, Weitzman and Miles state that NUD•IST "ranks as one of the top two or three programs available for coding-oriented data analysis..." (Weitzman & Miles, 1995, p. 256). While initial coding of data is time consuming, once coding has been done, the use of NUD•IST makes the storage, retrieval and interpretation of information easier. Moreover, the flexibility of NUD•IST allows for a more systematic and complete analysis of interview transcripts than if manual methods alone are used (Burroughs-Lange & Lange, 1993; Rouse & Dick, 1995).

Data categories were created by using a bottom-up or data driven method, a top-down or theory driven method, or a combination of both (Richards & Richards, 1995b). A top-down or theory driven approach, with categories mirroring the Conceptual Model outlined in Chapter 2, was used when coding the responses to interview questions five, six and seven, namely:

- "In Ed. 101, for project One (remember Piaget) you were asked to conduct an experiment and then to write a report out of class time. Can you explain the particular method you used to plan and write the report?";
- "In Ed101 you had to complete three short answer tests. Please explain the method you used for preparing for the these tests."; and
- "Please think back to the final exam in Ed101. Please explain how you went about preparing for the exam".

When coding the responses to the writing task, the categories were respecified in order to describe the activities associated with the task. The categories which formed the basis of the coding for questions five, six and seven are shown in Table 3.5.

Table 3.5
Outline of categories used to code data from interview questions 5, 6, and 7.

Category	Description for tests and examination	Description for writing tasks
Cognitive		
rehearsal	repeating, underlining, highlighting, verbatim note taking	underlining, highlighting, reading, verbatim note taking
elaboration	paraphrasing, summarising, creating analogies, generative note taking	integrating notes, paraphrasing, summarising
organisation	selecting main idea, clustering, outlining, ordering, diagramming	selecting appropriate information, ordering, clustering, outlining,
Metacognitive		
planning	goal setting, analysing task, activating prior knowledge, skimming	goal setting, analysing / organising task, activating prior knowledge, cue seeking,
monitoring	self-testing, self-questioning, tracking attention	tracking progress, checking answering question, checking for errors
adapting	re-reading, reviewing, fine tuning and adjusting cognitive activities	re-reading, adjusting, editing, re-arranging, correcting, re-doing
knowledge self	any comment showing self knowledge, for example when learn best, how learn	any comment showing self knowledge, for example when write best, how write
knowledge task	recognising the task demands eg difficulty, what strategies task requires	recognising the task demands eg difficulty, what strategies task requires
knowledge environment	recognising obstacles, constraints, support or ideal learning conditions	recognising obstacles, constraints, support, or ideal learning conditions
Resource management		
time & study environment	scheduling, timetabling, effective use of study time and environment	scheduling, timetabling, effective use of study time and environment
effort regulation	effort attribution, self-talk, self-reinforcement, persistence	effort attribution, self-talk, self-reinforcement, persistence
peer learning	collaborating, discussing, sharing ideas	collaborating, discussing, sharing ideas
help seeking	seeking assistance from instructor, peers, or others	seeking assistance from instructor, peers, or others

A data-driven approach was used when coding the responses to the remaining interview questions, namely:

- "What are your impressions of university after being here for one semester?";
- "What should your lecturer do to assist you learn?";
- "What sort of teaching strategies help you learn the subject?";
- "Please think back to Ed101, was anything included that made it different from your other units, other than content?"; and
- "Do you ever stop and look back or reflect on your own learning strategies?".

Data were analysed by grouping the responses into categories that emerged from the data. The categories were modified or added to in response to material emerging from the interviews and by conceptual refining of the initial categories. Care was taken when categorising the raw data that the categories were internally homogenous (ie all items in a single category were similar), and also heterogenous (ie differences between categories were distinct and clear). Furthermore, all relevant items were placed into a category. The categories were checked to ensure that, given the data, they were a plausible reflection of the purpose of the research (Merriam, 1988).

NUD•IST is divided into two main systems, a document system and an indexing system. The document system contains information about every text document whether on or off-line. The index system contains the index categories (called nodes) constructed by the user and to which appropriate segments of text are assigned. An index category or node can have any number of categories attached below it as "children" or next to it as "siblings". By attaching nodes in a hierarchical fashion the categories or nodes form trees. When an index system is created each node receives a numerical address which indicates its location and position in the hierarchy. Thus, the nodes of the index system, where indexing is kept, are organised into hierarchies, or trees, to represent the organisation of concepts into categories and subcategories (NUD•IST, 1994; Richards & Richards, 1995b).

In the present study, an index system was developed which included nodes or categories for demographic data such as group (LSG1 or RG1), gender, course enrolled in, previous education, metacognitive score on the MSLQ, and academic performance data (Category: BASE DATA); the interview questions, (Category: QUESTIONS); and categories derived from the conceptual framework or from the data, as described earlier, (Categories: BELIEFS, ED101, TEACHING, TESTS, EXAMS, WRITING and REFLECTION). The Category "BELIEFS" included nodes for beliefs about university, beliefs about the origins of learning strategies used for tests, examinations or writing, and beliefs about the effectiveness of the learning strategies used for tests, examinations and writing. The Category "ED101" included nodes for differences and similarities to other units in relation to instructional style and strategies used. The Category "TEACHING" included nodes for instructional style and strategies used in the Educational Psychology course. The Categories "TESTS", "EXAMS" and "WRITING" included nodes for cognitive strategies, metacognitive strategies, resource management, motivation and affect as outlined earlier in Table 3.5. Figure 3.5 illustrates a component of the Category "EXAMS" as used in the research study. See Appendix 3.13 for the complete list of NUD•IST nodes.

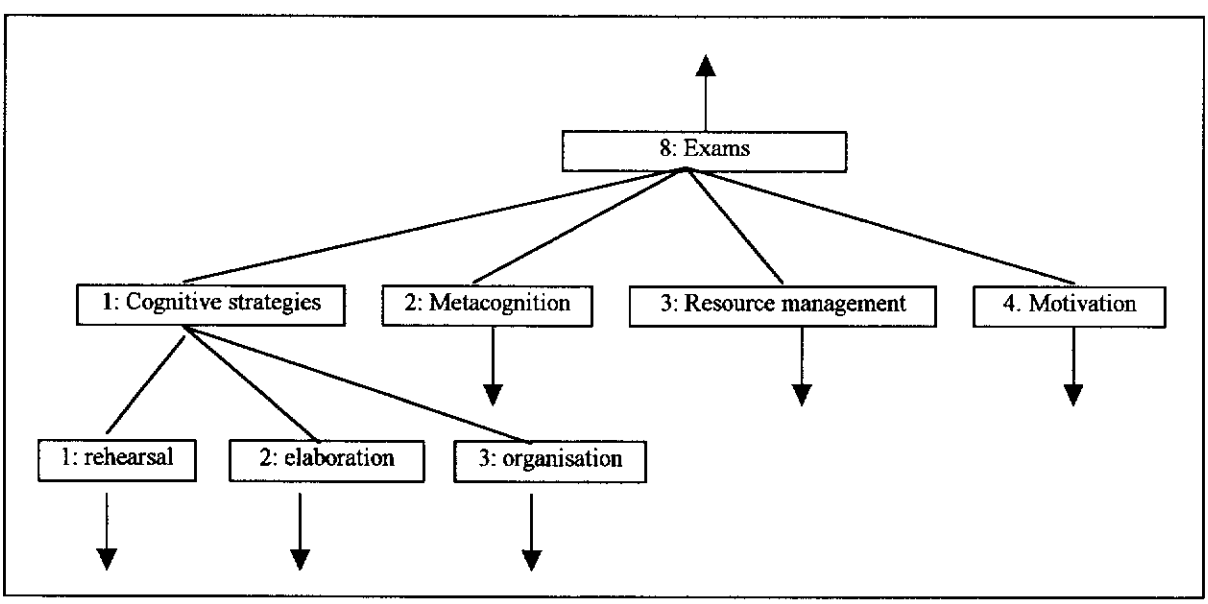


Figure 3.5 Section of NUD•IST tree showing cognitive strategies.

Interview transcripts were entered verbatim into NUD•IST and coded using a line of text as the coding unit. Each line was automatically numbered by NUD•IST for identification and retrieval of text within each interview. Coding units were set by the researcher and represented the smallest unit of text recognised by NUD•IST. The researcher then used a hard copy of each numbered interview to code the data and / or create categories. Each question on the interview schedule was coded systematically across all interview documents. After each question was coded, the corresponding line numbers were entered and coded in NUD•IST.

When analysing the Reflective Diary, a bottom-up or data driven approach was used. In order to facilitate the emergence of themes, data analysis was conducted in an open-ended manner using the "constant comparative method" (Glaser and Strauss cited in Le Compte & Preissle, 1993). Diary entries were read, and notes and comments jotted down in the margins, which served to "isolate the initially most striking, if not ultimately most important, aspects of the data" (Goetz and Le Compte cited by Merriam, 1988). Patterns which emerged were then transformed into categories into which Diary entries were sorted. These categories were then grouped under three over-arching themes namely, "instructor factors", "student factors" and "institutional factors". "Instructor factors" related to entries that referred to the instructor's teaching and how it impacted (positively or negatively) on her experiences and perceptions, "student factors" related to entries that referred to any issue that described the impact students had on the instructor's experiences or perceptions, while "institutional factors" referred to comments that described institutional factors that impacted on the instructor's experiences and perceptions. When analysing the Reflective Diary, the same care was taken to ensure that the categories and themes were a plausible reflection of the purpose of the research as that taken when analysing the interview data outlined earlier.

Phase 4: Design of expanded learning support program

Approach adopted and strategies selected

Based on the data collected in Phase 2, and analysed or read in Phase 3, the Semester 1, 1995 learning support program was further developed. The feedback obtained from students' responses to the questionnaires and surveys, as well as from the interviews, was used to inform development. Since the program aimed to assist students to be effective learners and to meet their learning needs, student views were seen as fundamental to the development of the expanded program. Again, however, strategies selected had to be clearly identified and located in a theoretical perspective. The strategies included in the Semester 2, 1995 program in the context of the perspective in which they are located, are outlined next.

Cognitive perspective

In the context of the cognitive perspective, a summary strategy was introduced, and metacognitive strategies and small group learning activities were retained. These are discussed below.

In order to assist students to develop their elaboration skills, a **summary strategy** was included in the Semester 2 learning support program. The strategy was included because analysis of the MSLQ data indicated that after a semester of study students were using rehearsal strategies the most, and elaboration strategies, the least. In addition, analysis of the SATL data indicated that 88% of students supported the statement "having to write summaries for homework before the first two Ed101 tests helped me learn", and that 81% believed that outlining the chapter helped them learn. Further, a number of students specifically suggested that being asked to make a summary would assist them to learn, as the following interview comments show:

"[being asked to make a summary] every week would be effective so that people get home and don't have a big text book in front of them and not know where to start. They could say okay I need to read this bit and do a summary. I think that would be great if all lecturers could do that just say. That would be really effective, because I think a lot of people watch TV when they get home unless there is something set." [$S_1$09][1]

"Summaries, like if teachers insist that you write a summary, especially if you are encouraged to write a summary after every lesson, to just write it in your own words, so if they encourage that, that is good." [$S_1$11]

Moreover, comments made by students indicated that they wanted learning support that promoted active learning and encouraged them to complete the work set, as opposed to being told only about the importance of using appropriate strategies or how to use them:

"...you should make us do it rather than just telling us it is good. Say, I want to see a chapter summary for every chapter." [$S_1$09]

"I think another thing is asking us if we did apply these things [the strategies] because now I am thinking okay now I am definitely going to work and use these strategies... and by asking us all the time. Don't just give instructions to us, you've got to umm ... teach us how to." [$S_1$03]

The literature on student learning suggests that using elaboration strategies such as summarising, helps to integrate and connect new knowledge with prior knowledge (Kirby & Pedwell, 1991; Pintrich, et al., 1991; Willoughby, Wood, & Khan, 1994). In addition, because students had had a semester of Educational Psychology, it was believed that they had had time to familiarise themselves with the subject, and that it was, therefore, appropriate for them to include higher level learning intentions such as integrating ideas into higher order structures (Shuell, 1990). Also, promoting meaningful learning and conceptual understanding and conveying to students that they are "expected to understand, apply and make sense of what they are learning" has been shown to enhance mastery and self-regulated learning (Meece, 1994, p. 39).

The ability to produce an adequate summary is a useful tool for understanding and studying texts. Furthermore, one method for learners to test their level of

[1] S_1 refers to an interview conducted in Semester 1, and the numbers 1 to 15 refer to students from the LSG1, while 16 to 21 refer to students from the RG1.

comprehension, retention and, thus, preparedness for a test is to summarise the material read (Brown, Campione, & Day, 1981; Pintrich, et al., 1991). Writing a summary is an important task as the quality of the final product depends, not only on the ability to write, but also on the extent to which the material being summarised has been comprehended (Hidi & Anderson, 1986). Making summaries has, however, been shown to be a difficult task, especially for inexperienced learners (Brown, et al., 1981; Hidi and Anderson, 1986). Furthermore, research has shown that merely instructing even second year university students to make brief summaries, has been found to be insufficient for them to carry out the task satisfactorily. Exact specifications of the rules that could be used to achieve this aim, however, have been found to be an extremely effective instructional routine to assist students accomplish the goal (Brown, et al., 1981). The rules that have been found to be successful are: 1) deleting material that is unimportant; 2) deleting material that is important but redundant; 3) substituting a list of items with a superordinate term; 4) substituting the subcomponents of an action with a superordinate action; 5) selecting the topic sentence; and, 6) inventing a topic sentence if one cannot be identified. These rules are used by experts when summarising texts (Brown, et al., 1981; Brown & Day, 1983; Hidi & Anderson, 1986).

Students in the LSG1 were given a handout which outlined the six rules (see Appendix 3.14) and were given explicit instructions and modelling in the use of the rules. In class, using their own texts, they were shown how to check that they had a topic sentence for each paragraph, that all redundancies were deleted, all trivia erased, and that any action or list of items were replaced with superordinates. Furthermore, they were asked to bring a one page summary of the week's prescribed reading to class every week. At the beginning of each tutorial, time was set aside for students to work in groups to discuss their summaries, and to specifically discuss what each member thought the reading's main points were. After a general discussion as a group, they then identified the three main points in the reading. One member of each group presented to the class the points identified by the group (see Appendix 3.15 for overhead used in class). Students were also given a summary checklist (see Appendix 3.16) to prompt and direct their summary making. While students discussed their summaries, the researcher went around to each group and asked each student who

had completed the summary to reward him/herself (students could make use of the sweet jar if they wished to reward themselves in class). Students who had not completed the summary were asked to make a summary while the group discussion took place. The tutorial activities were planned and organised around the set readings and, therefore, relied on students having the background knowledge gained by reading the set material and completing the summary. Prior to implementing the summary strategy, students' opinion and views on using this strategy were sought. In the first tutorial, the summarising strategy was explained to the students, they were also given a handout outlining the strategy (see Appendix 3.17), and were asked to vote as to whether the strategy should be implemented. Anonymous voting slips were provided and students ticked a "yes" or "no" box. A pair of students were allocated the task of counting the votes in class. The overwhelming majority of students agreed to using the strategy. Therefore, only once the students' commitment had been obtained, was the strategy implemented.

After the first week, feedback from students indicated that they were finding it very difficult to summarise the week's reading. They found it hard to identify the main points in the text, and were including too much information. The researcher, therefore, altered the task (as suggested by Hidi and Anderson, 1986) making it easier for students to master and also gradually increasing task difficulty. The researcher constructed a one page summary skeleton outline leaving space for students to summarise the material under the headings provided. Students were also asked to include a summary diagram or illustration on the other side of the page (see Appendix 3.18 for an example of an outline given to students). Each week, the researcher explained how the headings were selected and, for the last two weeks of class, students were asked to construct their own outline. This strategy was used by Dunston and Ridgeway (1990) who found that there were no differences, on academic performance on a multiple choice test or a free recall task, between groups of students who had either constructed their own summary outlines (graphic organisers), who were given a partially complete organiser to add the supporting details to, or who were given a researcher constructed organiser providing the main ideas and supporting details.

The student summaries were writer-based and aimed to help them facilitate and monitor their own comprehension of the subject matter, as well as providing them with a condensed, external record of important text sections (Hidi & Anderson, 1986). Writer-based summaries were selected as they are a useful tool for studying because the writer need only be concerned with his/her own personal study needs and not with constraints imposed by an audience. Writer-based summaries are much easier to prepare and also provide a stepping stone to more formal reader-based summarisation. Furthermore, allowing students to write summaries for themselves before learning to write for others, represents a practical way to ease the difficulties of summary writing often experienced by writers (Hidi & Anderson, 1986; Kirby & Pedwell, 1991).

In general, students were encouraged to use **metacognitive strategies** to plan, monitor and evaluate their learning. At the end of each session, as in the Semester 1 program, students were asked to reflect on what they had learnt. Students shared their reflections with other members of the class. Students were also encouraged to assess their learning strategy use and, where necessary, encouraged and assisted to adapt and modify how they were learning. **Small group work** was also extensively used, since student responses on the SATL survey indicated that they rated working in groups very highly (84% of students indicated – by selecting a 1 or 2 on a scale of 7 – that they believed working in small groups was a good way to help them learn).

Behavioural perspective

In the context of the behavioural perspective, goal setting and the use of reinforcement were retained in the expanded learning support program in Semester 2. Feedback about the **goal setting** strategy obtained from the analysis of the SATL was not conclusive. Therefore, students were asked in the first Ed102 tutorial whether they wanted the goal setting, monitoring and rewarding strategy to continue. Students were asked to vote anonymously so that a majority class decision could be made. The majority of students (20 out of a total of 24) wanted the strategy to continue. Based

on students' responses, time was set aside in class for students to set **learning goals**, monitor their goals and reward themselves when their goals had been met.

As in Semester 1, 1995, to encourage students to engage and persist in using the strategies taught, both in and out of class, **reinforcement** in the form of rewards was used.

Social learning perspective

In the context of the Social learning perspective, the planning of a learning timetable, discussing test-taking strategies, completing of a calendar and task lists, the use of modelling, and submitting of a draft essay, were also retained in the expanded learning support program. Overall, as in the Semester 1 learning support program, group interaction, open discussion, personal reflection and self-rewarding were all emphasised and used.

Students were given the opportunity to submit a **draft copy** of the essay component of their project task. Before implementing the strategy, students' opinions regarding the submission of a draft were sought. Again, students voted on the strategy, and all indicated that they wished to submit a draft copy. Students were also given detailed feedback on their draft essay using a numbered feedback sheet developed by the researcher (see Appendix 3.19). Analysis of the SATL survey completed in the Semester 1, indicated that students found obtaining feedback on their draft the most successful strategy to assist them improve their writing. Ninety-three percent of the students agreed that submitting a draft helped them improve their writing and 96% said that the numbered feedback sheet was a good way to give them feedback. Moreover, interview feedback showed that submitting a draft and obtaining feedback using a specific feedback sheet were the most highly rated strategies used in Semester 1.

In summary, as in Semester 1, the instructor endeavoured to ensure that students were informed and active participants in their own learning, and the approach adopted to teach the learning strategies all used modelling, group work, open discussion,

personal reflection and self-reinforcement. In Semester 2, however, the instructor focused more on learning for understanding and encouraged students to take greater responsibility for their own learning.

Phase 4: Implementation of learning support programs

The learning support program described above was implemented in one Semester 2 Educational Psychology class. In addition, the learning support program implemented in Semester 1,1995 was again implemented with one class of students in Semester 2, 1995. The participants and the context in Phase 4 of the study are described below.

Participants

The participants ($N = 138$) were enrolled in the Semester 2 core Educational Psychology course, Ed102 Theories of Learning, which followed on from Ed101, in Semester 1. The profile of the group is described below.

Gender and area of enrolment

Of the cohort, 122 (88%) were female and 16 (12%) were male. Twenty-eight (20%) were enrolled in the Secondary program, with the remaining 110 (80%) divided between the Early Childhood and Primary Education programs. Ten (63%) of the male students were enrolled in the Secondary Education program with the remaining six (37%) enrolled in the Primary Education program.

Age range

Students' ages ranged from 17 to 46 years ($M = 20.5$, $SD = 5.19$), and 79.3% were younger than 21.

Participation of students

Two classes of students ($n = 49$) out of a total of six classes ($N = 138$) were selected to participate in the learning support programs. Of these, one class (referred to as LSG2e from here on) was chosen because it was the only almost "intact" class, comprising 24 students (19 out of whom had participated in the Semester 1 learning support program). The expanded learning support program described above was implemented in this class (see Appendix 3.19 for an outline of the weekly implementation details of the learning support program). The other class (referred to as LSG2r from here on) was chosen specifically because the majority of students (23 out of 25) had not participated in the learning support program in Semester 1. The original learning support program was implemented in this class. The remaining four classes (referred to as RG2 from here on) were allocated equally to the other two instructors by the staffing coordinator and were taught conventionally, that is systematic learning support was not provided by the discipline instructor in these classes (see Figure 3.6).

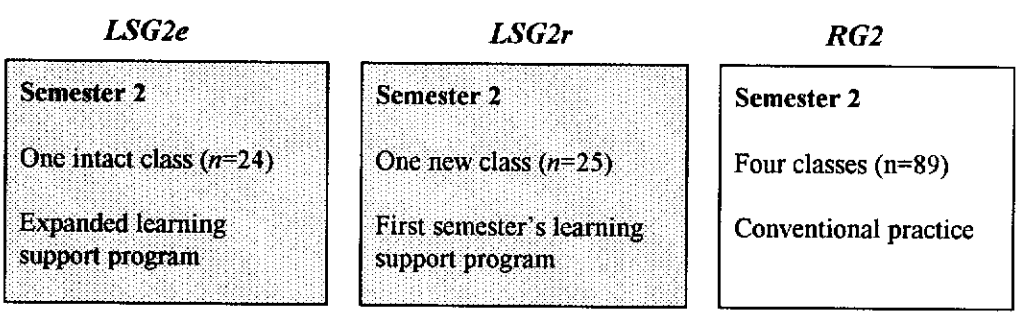


Figure 3.6 LSG2e, LSG2r and RG2 in Semester 2, 1995.

Student attrition

In the LSG2e, two students (8%) withdrew in the first few weeks of semester, leaving 22 students (19 of whom had participated in the Semester 1 learning support program) in the group. Similarly, in the LSG2r, two students (8%) withdrew in the first few weeks, leaving 23 students (21 of whom had not participated in the Semester 1 program) in the group. In the RG2, 19 (21%) withdrew by the end of the semester, leaving 70 students in the group. Thus, as in Semester 1, the LSG2e and LSG2r had lower attrition rates than the RG2.

Context

The LSG2e and LSG2r were implemented in Ed102. While contact time, presentation of content and attendance at the lecture and tutorial sessions were the same as for Ed101, the content covered was Theories of Learning. The central content covered included the following topics, behavioural learning theories, cognitive learning theories, humanistic learning theories, measurement and evaluation, motivation, classroom management and effective teaching. Also, the short answer tests were completed in the lecture sessions rather than in the tutorial sessions. Semester 2, 1995 consisted of eight teaching weeks, two teaching practice weeks and one week free of class contact. Assessment comprised one written project report worth 20 marks, a group tutorial presentation worth 20 marks, three short answer tests worth 10 marks each, and a final multiple choice test worth 30 marks (see Appendix 3.21 for examples of the short answer test questions and multiple choice test items).

Phase 4: Evaluation of learning support programs

The learning support programs implemented in Phase 4 of the study were evaluated in the same way as the learning support program implemented in Phase 2 of the study, and described earlier in this chapter. A brief summary of the research design, instruments used and data collection procedure used in Phase 4 of the study, follows.

Data gathering approach and research design

As in Phase 2, a representative nonequivalent comparison-group design using pre - posttests was used. Questionnaires administered at the end of Semester 1 to all students studying Ed101 served as the pretest for Semester 2. Questionnaires administered at the end of Semester 2 provided the posttest data. Qualitative data gathering took the form of a structured interview and a Reflective Diary. As in Semester 1, students were selected for interview on the basis of their metacognitive scores on the MSLQ.

Instruments

The same instruments used to evaluate the learning support program in Phase 2 of the study were again used in Phase 4, namely, MSLQ, STAI, AACL, a structured interview schedule and a Reflective Diary. The less formal survey instruments used again were the Perceptions and the SATL (see Appendix 3.22 for SATL survey).

Procedure

Quantitative pre - posttest data were collected using the MSLQ and the STAI which all students completed. In addition, at the end of Semester 2, all students completed the AACL and the Perceptions survey and a group of students were interviewed. Also, LSG2e and LSG2r students completed the SATL. During the semester, students in the LSG2e and LSG2r completed the AACL survey four times and the Perceptions survey twice, and the instructor kept a Reflective Diary. The pattern of data collection in Semester 2, is outlined in Figure 3.7.

	LSG2e and LSG2r		*RG2*
n=45	**End of Semester 1 (pre)** Questionnaires: MSLQ STAI **During semester** Reflective Diary AACL Perceptions **End of semester (post)** Questionnaires: MSLQ STAI AACL Perceptions SATL Interviews: 12 Structured Other: Achievement scores	*n*=70	**End of Semester 1 (pre)** Questionnaires: MSLQ STAI **End of semester (post)** Questionnaires: MSLQ STAI AACL Perceptions Interviews: 8 Structured Other: Achievement scores

Figure 3.7 Outline of data collection in Semester 2, 1995 ($N = 115$).

In Semester 2, all students received formal feedback on their learning strategy use, based on MSLQ data from the end of Semester 1. Students received their score, the class mean, and some study "hints" and suggestions for each scale on the MSLQ. They were urged to make use of the feedback, to reflect on their learning, and, if required, to take the appropriate action.

Phase 5: Analysis of data

In Phase 5, data collected from Phase 4, as well as data not analysed but collected during Phase 2 of the study, were analysed. While the methods used have been described earlier, specific details not mentioned previously are included in the following sections.

Quantitative analysis

Demographic data, student achievement scores (derived from their performance on the course assessment tasks) and their responses to the MSLQ and the STAI

administered at the end of Semesters 1 and 2 were entered into a spreadsheet. Responses were matched so that only data from students who had completed both questionnaires were used in the analysis. Matching resulted in 103 pairs (89 female and 14 male). Students who had not participated in the learning support program in Semester 1 and who were in the LSG2e in Semester 2, and students who had participated in the learning support program in Semester 1 and who were in the LSG2r in Semester 2, were omitted from the analysis. Also, all students who had participated in the learning support program in Semester 1 and who were in the RG2 in Semester 2, were omitted from the analysis. The number of questionnaires included in the final analysis of the data collected in Phase 5 of the study is shown in Figure 3.8.

The matched data were entered into an SPSS data file and scored using the standard scoring procedures as outlined in the MSLQ and STAI manuals (Pintrich, et al., 1991; Spielberger, 1983).

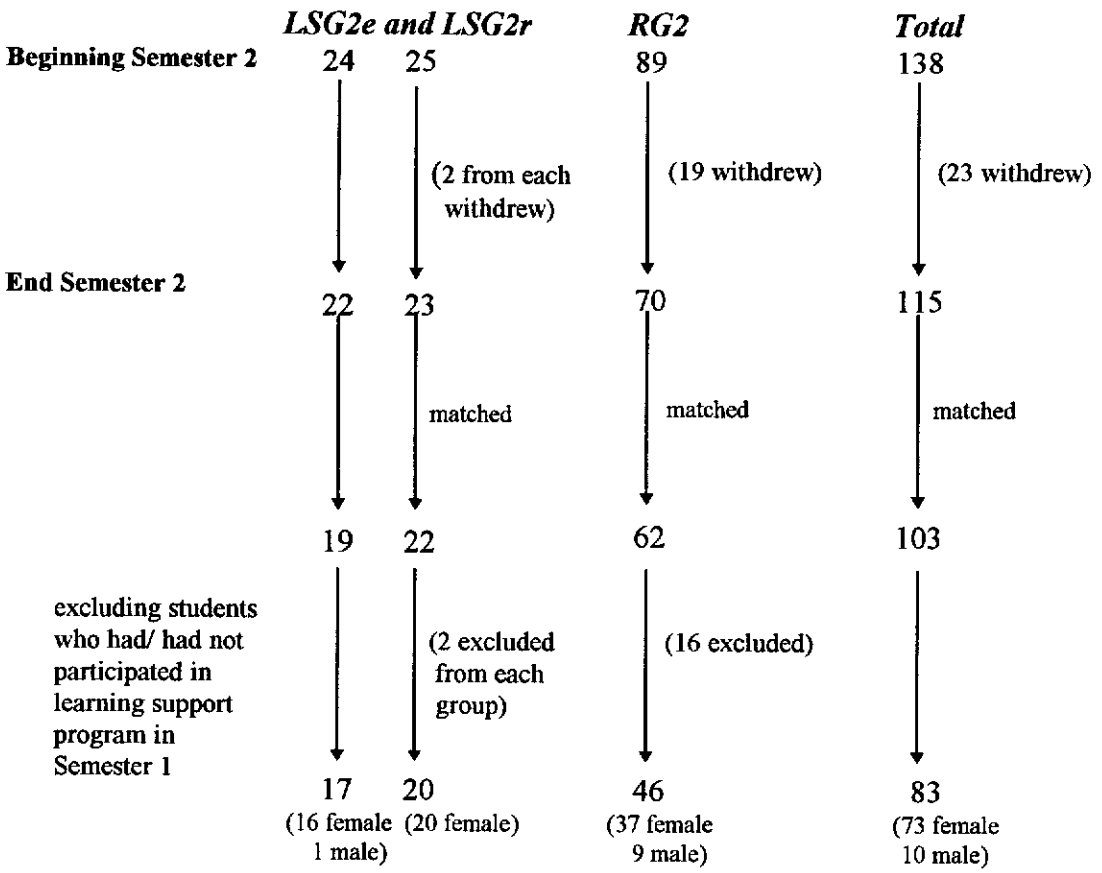


Figure 3.8 The number of MSLQ and STAI questionnaires included in the analysis of the data collected during Phase 4 of the study.

The AACL, Perceptions and SATL survey data were again entered into separate SPSS data files and then analysed.

Presenting data analyses

In presenting the quantitative data analyses, wherever possible, estimates of effect sizes were used. Carver (1996, p. 287) states that "at present too many research results in education are blatantly described as significant, when they are in fact trivially small and unimportant". He believes that researchers' dependence on tests of statistical significance are corrupting their research endeavours and states that even if researchers use significance tests properly, educational research would still be better off without them, as too often trivial and unimportant differences are interpreted as large and important simply because they are statistically significant. He believes (as do Bakan, Cronbach, Meehl, various authors in Morrison and Henkel, Skinner, Seeman, and Signorelli, all cited by Shaver, 1996) that the reliance on statistical significance testing should be minimised in educational research. Carver suggests instead, that, in single studies, statistical tests should be replaced with estimates of effect size and of sampling error. Borg and Gall (1989) agree, saying that, if researchers believe that tests of statistical significance are inappropriate for making inferences about the practical significance of the research results, they should calculate effect sizes because effect sizes, when used appropriately, are a helpful method for assessing the practical significance of relationships and group differences. Carver (1996, p. 291) contends that "a well-written research report should focus on the results and their effect sizes and then report standard errors to deal with chance, or sampling error, as one of many threats to internal validity." He believes, therefore, that in a single research study tests of statistical significance should be replaced with the two very important factors that they depend on - effect sizes and standard errors (Carver, 1996).

Effect sizes have traditionally been used in meta-analyses, with formulae being developed to convert most inferential statistics, such as *t*-ratios, *F*-ratios, percentages and correlation coefficients to effect sizes (Dunlap, Cortina, Vaslow, & Burke, 1996; Hedges, Shymansky, & Woodworth, 1989). In recent years use of this statistical technique, developed by Cohen in 1969 and adapted by Glass in 1976 and Hedges in

1981, has been widely adopted by researchers (Hattie, 1993; Hattie, et al., 1996; Tatsuoka, 1993). In this study, therefore, in line with the currently favoured approach, effect sizes were calculated by dividing the difference between the pretest and posttest mean scores by the common within-group standard deviation, hence,

$$g = \frac{\bar{X}_{post} - \bar{X}_{pre}}{S}$$

A random check using an alternative calculation was done to verify effect sizes obtained using the above formula, in this case using *t* values as follows,

$$d = t_c [2(1 - r) / n]^{1/2}$$

Where t_c is the t value calculated from the difference scores between matched pairs, r the correlation across pairs of measures, and n the sample size.

Furthermore, to ensure that the sample size did not bias the effect size calculated, a correction factor was used to produce an unbiased effect size estimator. The correction factor was a multiplier J, which depended on the degrees of freedom for the standard deviation in the denominator of the effect size (Hedges, et al., 1989, p. 25) and was calculated as follows,

$$J = 1 - (3/(4m-1))$$

Where m is the degrees of freedom of S, that is $m = n_{pre} + n_{post} - 2$ if S is the pooled standard deviation.

The unbiased effect size estimate is the product of J and g. For degrees of freedom above 50, the correction factor is between 0.99 and 1 and can therefore be ignored (Hedges, et al., 1989).

When interpreting the effect sizes the usual conventions were adhered to, namely:

- in relation to direction, positive effect sizes were interpreted as indicating higher post than pre scores and negative effect sizes indicated lower post than pre scores;

- when the measure involved an educationally accepted learning pathology (for example, test anxiety) however, a positive effect size indicated a lower post than pre value, thus the sign of the difference was changed to positive when a treatment had a positive effect, that is, if learning pathologies were reduced; and
- in relation to magnitude, an effect size of less than 0.2 was considered trivial, effect sizes between 0.2 and 0.5 were deemed small, moderate if they were between 0.5 and 0.8, and large if they were in excess of 0.8.

In educational terms, as shown by Cohen (1969), an effect size of 0.3 indicates that the performance of the top 50% of students in one group is greater than the performance of 62% of students in the other group.

In summary, while there is no simple answer to the problem of determining educational significance of research results, effect sizes offer a viable method for assessing the educational significance of relationships and group differences (Borg & Gall, 1989).

Qualitative analysis

The qualitative data derived from the responses to the open-ended questions on the Perceptions survey collected in Phases 2 and 4, and the SATL survey collected in Phase 4, were coded and analysed separately. A data driven approach, as described earlier, was used when developing the coding categories. Student interviews were analysed using NUD•IST using the same coding categories as those developed in Phase 2.

Validity and reliability of data

The following threats to the adequacy of the data collected in this study were considered, namely, inadequate amounts of evidence, inadequate variety and kinds of evidence, inadequate disconfirming evidence, and researcher bias. A number of strategies were employed to overcome these threats. These included, firstly, gathering data from multiple sources, namely from the instructor and students; secondly, using a combination of methods to gather data, namely questionnaires, structured interviews, surveys and teacher self-reflection; thirdly, seeking disconfirming evidence and including atypical and infrequent events; and fourthly, using exact quotes to illustrate the meaning-perspectives of the participants when presenting participant voices. Issues specific to the quantitative and qualitative data collected and the sample are discussed in the next section.

Quantitative data

Data on learning processes are difficult to measure unless the researcher uses an experimental design with highly specified experimental tasks. However, in this study a field based approach, often relying on student self-reports, was used because it was argued that the highly structured experimental approach was neither practicable nor ecologically valid. While there are limitations to using self-reports (there is a trade-off between decreased construct validity and increased external validity with self-report data), they can be used successfully if treated as just one source of data for the phenomena of interest (McKeachie, et al., 1986). Thus, in this study, as stated earlier, other measures were also used to triangulate data about the learning processes studied.

When analysing responses to the MSLQ and STAI, only matched cases, as described earlier, were used. At the end of the Semester 1, therefore, 43 out of a possible 45 questionnaires for the LSG1 and 85 out of a possible 93 for the RG1, were analysed. Incomplete cases were generally due to students being absent on the day the

questionnaires were administered. In total, therefore, 93% of all responses were included in the analysis (95% LSG1 and 91% RG1). In Semester 2, for the LSG2e, 17 out of a possible 19 questionnaires were analysed (the students who had not participated in the learning support program in Semester 1 were excluded from the analysis). For the LSG2r, 20 out of a possible 21 were analysed (the students who had participated in the first semester's learning support program were excluded). For the RG2, 46 out of 54 were analysed (the students who had participated in the Semester 1 learning support program were not included in the analysis). Therefore, in Semester 2, 88% of all possible data were analysed (89% LSG2e, 95% LSG2r, and 85% RG2). As the percentage of data analysed for each of the groups in both semesters was high, it is assumed that the results obtained are representative of the groups as a whole.

For the MSLQ in particular, while the instrument has been well validated by Pintrich, Smith, Garcia, and McKeachie (1993), internal reliability coefficients, namely Cronbach alphas, were calculated for this sample of students (see Appendix 3.23).

The coefficient alphas compare favourably with those reported by Pintrich, Smith, Garcia, and McKeachie (1993). The alphas for the Motivational scales are robust, demonstrating good internal consistency. Both the task value and self-efficacy for learning performance scales had very high alphas. Extrinsic goal orientation, intrinsic goal orientation, and control of learning beliefs showed more variability in students' responses. The alphas for the Learning scales are reasonable. While the scales measuring students' use of organisation strategies, peer learning and help-seeking had the lowest alphas, they are all still within an acceptable range.

Further, internal reliability coefficients for the three administrations of the STAI suggest that the internal consistencies for both the State and Trait anxiety scales are high. The alpha coefficients are presented in Appendix. 3.21.

Qualitative data

To ensure that reasonably comparable data from all respondents were obtained from the interviews, the opening statement, interview questions, and closing remarks were kept the same for all participants interviewed.

Reliability of coding was checked by:

- calibrating and cross-checking the definitions or meanings of nodes by the researcher and supervisor;
- discussing with the supervisor material that was difficult to code;
- making sure that text units coded on the same nodes within and across documents were consistent as far as definition and meaning were concerned; and
- a second person, who was a trained researcher and familiar with the area of student learning, cross coding four randomly selected interviews (19% of the total in the first semester and 20% in the second semester). Consultation between the researcher and the second person during and after the coding process led to agreement 90% or more of the time, suggesting a satisfactory level of inter-rater agreement (Boulton-Lewis, et al., 1996).

Overview of the five phases of the study

The five Phases of the study have been outlined in this chapter. The research questions, the associated methodology, and the chapter in which the outcomes (results, interpretation, discussion and implications) are presented are outlined in Figure 3.9.

The results of the data analysis, interpretation, discussion and implications are presented in Chapters 4, 5 and 6.

Research questions	Methodology	Outcomes
Phase 1 *How does current research and theory inform the design of learning strategy support programs?* *What strategies, based on current literature and past practices, are appropriate for enhancing first year students' learning so that they become more effective learners?*	Identify Conceptual Model Develop learning support program based on current literature and past practice Identify learning strategies Define learning strategies	**Chapters 2 and 3**
Phase 2 *Does providing in-context learning support enhance student learning in an Educational Psychology course?* *What are the students' and instructor's perceptions and feelings as they engage in a learning support program?* *From the students' perspective, which aspects of the instructional context facilitate their learning?*	Implement and evaluate learning support program in Semester 1, 1995 Administer questionnaires Conduct student interviews Keep Reflective Diary	**Chapter 4**
Phase 3	Analyse data from Phase 2	
Phase 4 *Does providing in-context learning support enhance student learning in an Educational Psychology course?* *From the students' perspectives which aspects of the instructional context facilitated their learning?* *What are the students' and instructor's perceptions and feelings as they engage in a learning support program?*	Expand and develop learning support program Implement and evaluate learning support programs in Semester 2, 1995 Administer questionnaires Conduct student interviews Keep Reflective Diary	**Chapter 5**
Phase 5 *What is the most appropriate length and timing for a program designed to enhance first year students' learning?* *Is there a relationship between learning behaviour and academic performance?*	Analyse data from Phase 4 Synthesise data on student learning and academic performance Refine Conceptual Model	**Chapter 5**

Figure 3.9 The five phases of the study indicating the research questions being addressed, the methodology used and the chapters in which the outcomes are presented.

Chapter 4

Results and Interpretation: Phase 2

Research Question 3: Does providing in-context learning support enhance student learning in an Educational Psychology course in terms of:

a) the learning strategies students use, their feelings about the effectiveness of their strategies, and their beliefs about the origins of their strategies?
b) students' motivational orientations?
c) students' affect, specifically students' anxiety, confidence, worry and discomfort?
d) students' academic performance?

Interpretation of findings

Research Question 4: What are the students' and instructor's perceptions and feelings as they engage in a learning support program?

Students' perceptions and feelings
Interpretation of findings
Instructor's perceptions and feelings
Interpretation of findings

Research Question 5: From the students' perspective, which aspects of the instructional context specifically, instructional style and instructional strategies, facilitate their learning?

Instructional style
Instructional strategies
Interpretation of findings

In this chapter, the outcomes of the evaluation of the learning support program implemented in Phase 2 of the study are presented. Specifically, Research Questions 3, 4 and 5 are addressed. The answers to the research questions addressed in this chapter are informed by the interpretation of the qualitative and quantitative data collected in Phase 2 and analysed in Phase 3 of the study. The Conceptual Model underpinning the study was used as a framework for presenting the data. Thus, the outcomes of data gathered on students' learning strategy use (including students' use of cognitive and metacognitive strategies, and their feelings and beliefs about their strategy use), their motivational orientations, their affective reactions and their academic performance, are presented. Furthermore, students' reactions to

participating in the in-context learning support program and the instructor's reactions to implementing the program, are outlined. Finally, students' views about the learning context, specifically relating to the "instructional style" and "instructional strategies" they believe instructors should adopt to assist them to learn are discussed. Findings are discussed in terms of the research on student learning and the Conceptual Model underpinning the study and with the knowledge that any findings of difference between LSG1 and RG1 students should be considered with caution given the design of the study and the differences in sample sizes. Further, percentages (especially for small numbers) are included only to assist the reader.

Research Question 3: Does providing in-context learning support enhance student learning in an Educational Psychology course in terms of:

a) the learning strategies students use, their feelings about the effectiveness of their strategies, and their beliefs about the origins of their strategies?

To address this research question, data related to studying in general as well as when studying for the tests, examinations and when completing the writing task were used. Data were gathered by administering the MSLQ at the beginning and end of Semester 1, 1995 and also by interviewing a sample of students at the end of Semester 1. Interviews focussed on students' use of learning strategies, and their feelings and beliefs about their learning and the learning context. Collecting data in this way allowed possible changes in learning strategy use to be established and interpreted in relation to students' studies in Ed101 and to the research on student learning, and the Conceptual Model.

Learning strategy use when studying in general

Differences in learning strategy use by students are shown as effect sizes in Figure 4.1, with details provided in Appendix 4.1. Effect sizes were calculated from the means and within group standard deviations shown in Appendix 4.1.

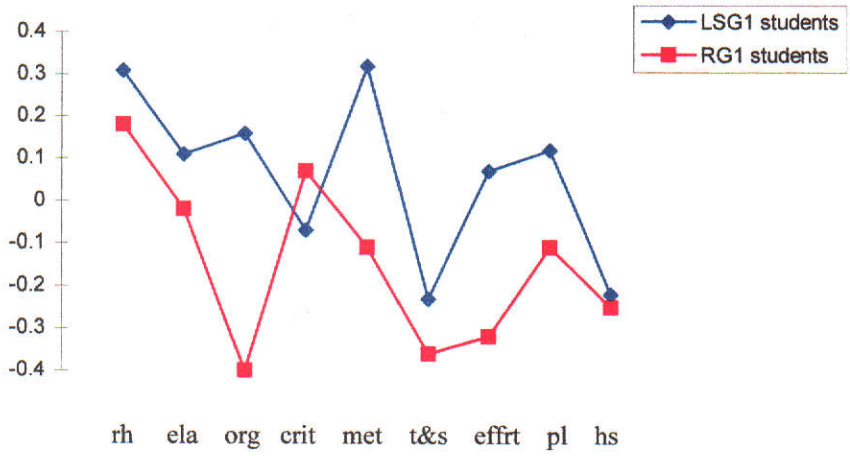


Figure 4.1 MSLQ "Pre - Post" effect sizes for learning strategy use by LSG1 and RG1 students.

Note. LSG1 $n = 43$; RG1 $n = 85$. rh = rehearsal, ela = elaboration, org = organisation, crit = critical thinking, met = metacognitive self-regulation, t&s = time and study environment, effrt = effort regulation, pl = peer learning, and hs = help seeking. Positive values indicate higher post than pre values.

Effect sizes were more positive for the LSG1 students than for the RG1 students for all strategies except critical thinking. Exceptionally large pre-post effect size differences between LSG1 and RG1 for students' reported use of organisation, metacognitive self-regulation, and effort regulation strategies and very small differences for their use of help seeking strategies were shown.

For LSG1 students, educationally significant[1] positive effect sizes were found for their reported use of rehearsal ($g = 0.31$) and metacognitive self-regulation strategies ($g = 0.32$), while significant negative effect sizes were found for their use of time and study environment ($g = -0.23$) and help seeking strategies ($g = -0.22$). For RG1 students however, no educationally significant positive effect sizes were found, but significant negative effect sizes were found for their reported use of organisation ($g = -0.40$), time and study environment ($g = -0.36$), effort regulation ($g = -0.32$) and help seeking strategies ($g = -0.25$).

Thus, overall, the learning support program appeared to be associated with small educationally significant increases in LSG1 students' use of rehearsal and

[1] Effect sizes greater than 0.20 were deemed educationally significant.

metacognitive self-regulation strategies (planning, monitoring and adapting). In contrast, being in the RG1 was not associated with any educationally significant increases in students' reported use of learning strategies, although, the RG1 students' reported use of learning strategies in comparison with LSG1 students, were nearly all higher at the beginning of the semester (see Appendix 4.2). While both groups showed small educationally significant decreases in students' use of strategies to manage their time and study environments and to seek help, membership of the RG1 (but not the LSG1) was associated with educationally significant decreases in students' use of organisation and effort regulation strategies.

Learning strategy use when studying for the tests and the examination, and when completing the first writing task

A sample of students ($n = 21$), 15 from the LSG1 and 6 from the RG1, were interviewed at the end of Semester 1, 1995. In the interview, students' views about their use of learning strategies, their feelings about their strategy use, and their beliefs about the origins of the strategies they reported to use were sought. The specific questions asked and the outcomes of the analysis of the interview data[2] are presented below.

Students were asked to respond to three questions regarding their use of learning strategies when: (a) learning for the tests ("In Ed101 you had to complete three short answer tests. Do you have any particular method for preparing for this type of test?"); (b) learning for the examination ("Please think back to the final examination in Ed101. Would you please explain how you went about preparing for the examination."); and (c) completing the first writing task for their Ed101 course ("In Ed101, for project one (remember Piaget) you were asked to conduct an experiment and then write a report outside class time. Can you please explain the method you used to help you plan and write the theoretical background section.").

[2] When students' comments are provided, S_1 refers to an interview conducted in Semester 1, and the numbers 1 to 15 refer to students from the LSG1, while 16 to 21 refer to students from the RG1.

Student responses were coded across all interview transcripts. Coding categories for the learning strategies are shown in Table 3.5 in Chapter 3. The number and percentage of students mentioning the use of cognitive, metacognitive and resource management strategies, when studying for the tests and the examination, and when completing the first writing task are summarised in Table 4.1.

Table 4.1
Number and percentage of LSG1 (n = 15) and RG1 (n = 6) students mentioning the use of cognitive, metacognitive, and resource management strategies when studying for the tests and the examination, and when completing the writing task

	tests		examination		writing task	
Strategy	LSG1	RG1	LSG1	RG1	LSG1	RG1
cognitive strategies						
rehearsal	14 (93)*	6 (100)	15 (100)	5 (83)	14 (93)	6 (100)
elaboration	13 (87)	3 (50)	6 (40)	1 (17)	15 (100)	5 (83)
organisation	11 (73)	3 (50)	6 (40)	2 (33)	14 (93)	4 (67)
metacognitive						
planning	10 (67)	2 (33)	7 (47)	3 (50)	13 (87)	4 (67)
monitoring	10 (67)	3 (50)	9 (60)	4 (67)	11 (73)	3 (50)
adapting	8 (53)	3 (50)	3 (20)	3 (50)	11 (73)	3 (50)
knowledge self	13 (87)	4 (67)	15 (100)	3 (50)	14 (93)	5 (83)
knowledge task	8 (53)	4 (67)	12 (80)	5 (50)	11 (73)	5 (83)
knowledge environ	9 (60)	1 (17)	9 (60)	2 (33)	14 (93)	6 (100)
resource management						
time & study environ	6 (40)	0	5 (33)	1 (17)	6 (40)	3 (50)
effort regulation	2 (13)	1 (17)	2 (13)	0	7 (47)	3 (50)
peer learning	3 (20)	1 (17)	5 (33)	0	2 (13)	2 (33)
help seeking	4 (27)	0	1 (7)	0	6 (40)	2 (33)

Note. * figure in brackets denotes percentage of the total in the group.

When learning for the tests, LSG1 students were more likely than RG1 students to report using elaboration, organisation, metacognitive self-regulation (specifically, planning and monitoring), and help seeking strategies, and more LSG1 students made statements that indicated that they possessed greater knowledge of themselves and of the environment. Further, only LSG1 students reported using strategies to manage their time and study environments. A similar proportion of LSG1 and RG1 students

mentioned using rehearsal, adapting, effort regulation, and peer learning strategies. In contrast, RG1 students were more likely than LSG1 students to make comments which indicated they possessed knowledge of the task.

When learning for the examination, LSG1 students were more likely than RG1 students to mention using rehearsal, elaboration, time and study environment and peer learning strategies. In addition, more LSG1 than RG1 students showed greater metacognitive awareness in terms of knowledge of self, of task and of the environment. A similar proportion of LSG1 and RG1 students reported using organisation, planning, monitoring, and help seeking strategies. RG1 students were more likely than LSG1 students to mention using adapting strategies.

For the first writing task, there were greater similarities in LSG1 and RG1 students' reported use of strategies than those reported when studying for the tests or the examination. Both LSG1 and RG1 students were likely to report using rehearsal, elaboration and organisation strategies. In addition, a similar proportion of LSG1 and RG1 students reported using strategies to manage their time and study environment and to manage their effort. LSG1 students were more likely than RG1 students to mention using planning, monitoring and adapting strategies.

In terms of the strategies used when completing the set tasks, rehearsal strategies were reported the most by both LSG1 and RG1 students, with the overwhelming majority of students reporting using some type of rehearsal strategy, especially when studying for the tests and the examination. Elaboration and organisation strategies were more likely to be used by both LSG1 and RG1 students when completing the writing task. In addition, when students reported using elaboration strategies, their use appeared to be generally much less detailed when studying for the examination than when studying for the short answer tests, as illustrated by the following comment:

> *"I would go from a reading it [the text] to a point form summary. I would only write it out once, and then I would just look at it and I would know it was there... Sometimes I would only make a bulk summary for learning the vocabulary, and that was it."* [$S_1$08]

Very few LSG1 or RG1 students reported using resource management strategies, especially peer learning, help seeking, effort regulation and strategies to manage their time and study environments, other than when completing the writing task. In fact, many LSG1 and RG1 students, especially when studying for the examination, reported that they did not cover all the set material, did not put enough time and effort into studying or resorted to "cramming", as illustrated by the following comments:

> *"I didn't bother to read it all because it was just so much, there was no point. It was better to learn specific points."* [$S_1$16]

> *"I really think I didn't put enough time into this one [exam], because at that stage we had heaps of assignments due and everything was very busy at that stage. So I didn't make..."* [$S_1$10]

> *"I did more cramming for the examination, more than the other ones [tests]. When you're cramming you know that you're not studying properly and you just know that there could be a better way of doing it, but it is too hard to do."* [$S_1$06]

Feelings about effectiveness of learning strategies

In the interviews at the end of Semester 1, 1995, students were asked to explain how they felt about their learning strategies. Student responses are presented in Table 4.2.

Table 4.2
Number and percentage of LSG1 (n = 15) and RG1 (n = 6) students mentioning feelings about the learning strategies they used when learning for the tests and the examination, and when completing the writing task

	tests		examination		writing tasks	
Feeling	LSG1	RG1	LSG1	RG1	LSG1	RG1
"works"	9 (60)	1 (17)	5 (33)	4 (67)	6 (40)	3 (50)
"good"	4 (27)	2 (33)	8 (53)	2 (33)	2 (13)	1 (17)
"confident"	3 (20)	0	3 (20)	1 (17)	1 (7)	1 (17)
"helps learn"	4 (27)	0	4 (27)	1 (17)	0	0
"easiest way"	0	0	1 (7)	0	3 (20)	1 (17)
"does not work"	1 (7)	1 (17)	0	0	0	0
"not good"	3 (20)	2 (33)	5 (33)	1(17)	2 (13)	1 (17)
"needs changing"	2 (13)	2 (33)	5 (33)	1 (17)	4 (27)	5 (33)
"takes time"	6 (40)	3 (50)	5 (33)	1 (17)	2 (13)	5 (33)
"felt unprepared"	0	0	7 (47)	1 (17)	0	0
"no better way"	0	0	0	0	1 (7)	1(17)
"unsure"	0	0	0	0	3 (20)	1 (17)
"conditional"	3 (20)	0	5 (33)	1 (17)	2 (13)	0

Student responses to the question "How do you feel about your method?", suggested that LSG1 students were more likely than RG1 students to feel positive about the strategies they used when studying for the tests, making comments about their method in terms of it working, being "good", generating feelings of confidence, or helping them learn, as illustrated in the following comments:

> *"It works for me....it fulfils my needs so."* [$S_1$08]
>
> *"I seem to feel good about it...It has been good."* [$S_1$11]
>
> *"I feel really confident when I go into the test or examination..."* [$S_1$05]
>
> *"I think it helps me learn it, because by reading it and writing down everything..."* [$S_1$15]

The RG1 students however, were more likely to make negative comments about the method they used when studying for the tests in terms of it not working, not being "good", or needing changing. In contrast, LSG1 students were more likely to make negative comments about the method they used when studying for the examination.

Examples of LSG1 and RG1 students' negative comments about the method they used when studying for the tests or the examination follow:

> *"I studied and studied and, and then I got a bad mark on the test."* [$S_1$18]

> *"My method? I think it is pretty shaky. It's sort of still in the early days... not very good. I wish, I prefer to be more organised about the way I go about it... I think that maybe I have to brush up on it and sort of become more efficient at using it, definitely."* [$S_1$02]

> *"I wrote down, summarised everything, wrote point form notes, but I should have done it the week before at least, ... I felt so unprepared."* [$S_1$03]

LSG1 students were more likely than RG1 students to make conditional statements about the method they used, as illustrated by the following comments:

> *"When I stick to it I like it, I really do, it works. As long as I stick to it. It's all very well saying this is my method, but if I don't stick to it well!"* [$S_1$01]

> *"... it is just that I have to get the time management right and then..."* [$S_1$10]

In relation to the writing task, both LSG1 and RG1 students expressed similar feelings about the method they used. Further, students from both groups indicated that they knew "no better way", or that they were "unsure" about their method only in relation to the writing task, as illustrated by the following comments:

> *"...because I haven't found a better way or been made aware of a better way."* [$S_1$09]

> *"It is cutting out on work though, I don't know if it is better or worse."* [$S_1$21]

Beliefs about origins of learning strategies

In the interviews, students were asked where they thought they had learnt the method they used when studying for the tests and for the examination, and when completing the first writing task. Students' responses to the questions are presented in Appendix 4.3. A summary of the findings is presented below.

A large proportion of LSG1 and RG1 students believed that they learnt the method they used when studying for the tests and the examination at high school. A small

percentage of students associated a specific learning method with a specific high school subject. In relation to the influence of university on students' learning methods, there were differences between the LSG1 and RG1 students' responses. LSG1 students were more likely than RG1 students to mention that Ed101 was associated with the method they used, particularly when studying for the tests, with just under half the LSG1 students mentioning Ed101, making comments such as:

> *"Summarising the summary, in Ed101."* [$S_1$03]

> *"I think [the instructor in Ed101] suggested that group study... I did not study in groups at school, so it was something we just decided to do in Ed101."* [$S_1$15]

> *"Ed101's contribution to my method was the explosion chart [concept map]. She [the instructor] introduced the explosion charts, because I just used to write them all on study cards..."* [$S_1$07]

> *"She [the instructor] emphasised talking about it like, last year we were told do it this way and we were not encouraged to talk about it, she thought it was a good idea to discuss it... [it is a] good idea to discuss issues, it was not so at school."* [$S_1$07]

> *"Actually in Ed101 well actually there were a few..., it made me refine my method... She [the instructor] used to do a time management thing which was good. I remember the first day she made us do a chart of every single unit and after we did one for Ed101 and that was good and I like went home and made a bigger one and put it on my door every time an assignment was due I'd cross it off and I would know how long I'd had."* [$S_1$03]

If RG1 students mentioned Ed101 it was in relation to using the Study Guide, as illustrated by the following comments:

> *"[Instructor] said it was a good idea to get the Study Guide because it asks questions in the kind of model as the end of year test. I must have just latched onto that."* [$S_1$21]

> *"I heard that it [the exam] was going to be like the green book [Study Guide], so that is why I studied the green book!! I think .... [Instructor] told us."* [$S_1$18].

For the writing task, while the majority of students again associated school with the method they used, approximately half the LSG1 and RG1 students also mentioned the role of Ed101, making comments such as:

> *"The help from [external writing support tutor in Ed101] was probably the best... it was with the teachers' help that I could see it all and link it together... I learnt a bit more about the essay structure and the way to go about it."* [$S_1$16]

"Oh, we did a thing in Ed psychology [Ed101] that saying you are supposed to spend this amount of time doing reading, this amount of time writing up a rough copy and only this amount of time actually writing it out..., that helped, yeah." [$S_1$18]

"When I did it [completed the writing task], I looked back to the notes that I had taken in class [Ed101], the referencing definitely helped and also with the introduction and conclusion. We learnt how many points to put in and what...I would not have done it as well I don't think." [$S_1$12]

b) students' motivational orientations?

In order to establish whether the learning support program was associated with any changes in students' motivational orientations, effect sizes were calculated from students' mean responses to the Motivation section of the MSLQ, administered at the beginning and end of Semester 1, 1995. Students' responses related specifically to their perceptions of their motivational orientations to Ed101 at the beginning (pre questionnaire) and at the end (post questionnaire) of Semester 1. The effect sizes are shown in Figure 4.2, with details provided in Appendix 4.4.

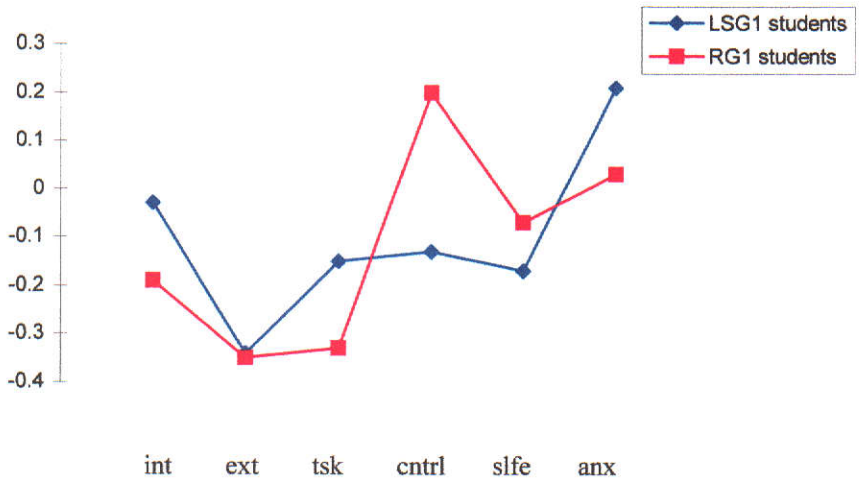


Figure 4.2 MSLQ "Pre -Post" effect sizes for Motivational Orientations of LSG1 and RG1 students.

Note. LSG1 $n = 43$; RG1 $n = 85$. int = intrinsic goal orientation, ext = extrinsic goal orientation, tsk = task value, cntrl = control of learning beliefs, slfe = self-efficacy for learning and performance, and anx = test anxiety. Positive values indicate higher post than pre values except for test anxiety where a positive value indicates a lower post than pre value (as the treatment reduced the learning pathology, namely test anxiety, it was considered to have had a positive effect).

Based on the findings presented in Figure 4.2, it appears that participating in the learning support program was associated with educationally significant decreases in LSG1 students' test anxiety and their extrinsic goal orientations, suggesting that students in the LSG1 may have participated less in tasks for external reasons such as grades, rewards, performance, evaluation by others or competition. While membership of the RG1 also appeared to be associated with an educationally significant decrease in students' extrinsic goal orientations, it also appeared to be associated with an educationally significant decrease in their task value beliefs and a reduction in their intrinsic goal orientations (very close to being educationally significantly) and an educationally significant increase in their control of learning beliefs. Thus, RG1 students may have believed that the tasks they engaged in were less interesting, less important and less useful than they thought they would be at the beginning of the semester, and that positive learning outcomes were contingent on their own efforts to learn, as opposed to external factors such as the instructor.

c) students' affect, specifically students' anxiety, confidence, worry and discomfort?

Anxiety

Student anxiety (other than test anxiety) was measured using the STAI and AACL. Pre-post effect sizes are presented in Figure 4.3, with details provided in Appendix 4.5.

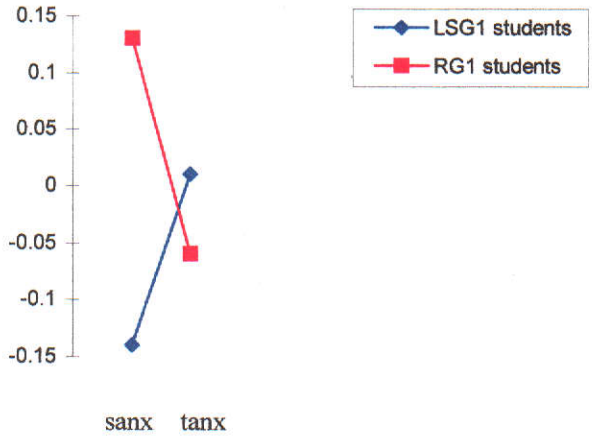


Figure 4.3 STAI "Pre - Post" effect sizes for State and Trait Anxiety of LSG1 and RG1 students.

Note. LSG1 $n = 38$; RG1 $n = 80$. sanx = state anxiety and tanx = trait anxiety. Positive values indicate a lower post than pre value (as the treatment reduced the learning pathology, namely anxiety, it was considered to have had a positive effect).

When comparing LSG1 and RG1 students' beginning semester scores to their scores at the end of the semester at university, effect sizes were well below 0.20 suggesting that there were no educationally significant differences in the level of anxiety associated with participating in either the LSG1 or RG1.

Data from the AACL was used to calculate a pre-post effect size for students in the LSG1. The effect size was found to be $g = -0.07$ ($M_{pre} = 9.40$, $M_{post} = 9.54$, within groups $SD = 1.97$). It was not possible to calculate an effect size for students in the RG1 because they completed the AACL at the end of the semester only. In terms of the end of semester scores however, no statistically significant differences, $F(1, 119) = .190$, $p = 0.664$, were found between the LSG1 and RG1 in terms of their anxiety, as measured by the AACL.

In summary therefore, at the end of the Semester 1, as measured by both the STAI and the AACL, there appeared to be no educationally significant differences in the level of anxiety associated with participating in either the LSG1 or RG1.

Confidence, worry and discomfort perceptions

At the end of Semester 1, 1995, all students completed the Perceptions survey which asked them to indicate how confident or worried they felt about Ed101 on a scale from 0 to 100, and to provide an explanation for their feelings. They were also asked to rate (0 to 100) how much discomfort they felt when attending the lecture and tutorial, working on an assignment, reading the textbook and studying at home for Ed101. Results are presented below.

In quantitative terms, no differences were found between the LSG1 and RG1 students in terms of their perceived confidence about their performance in Ed101, $F(1, 112) = .161$, $p = .689$. Furthermore, both groups reported similar levels of worry about their performance in Ed101, $F(1, 115) = .803$, $p = .372$. While no statistical differences were found, a higher mean perceived confidence score ($M = 66$, $SD = 21.28$) and a lower mean worry score ($M = 34$, $SD = 29.45$) for LSG1 students when compared to RG1 students' confidence ($M = 64$, $SD = 19.48$) and worry ($M = 39$, $SD = 28.51$) means were found.

In qualitative terms, the explanations students[3] provided about the degree to which they felt confident and/or worried about their performance in Ed101 suggested that there were differences in the reasons students gave for their feelings, as illustrated by the comments below.

LSG1 students mainly attributed a high level of confidence to the grades they had received:

> *"My results so far have been good."* [S_1L P10]

A number of students attributed their confidence level to the amount of work they had done:

[3] When student comments are provided, S_1 refers to a questionnaire administered in Semester 1, L to students from the LSG1, and R to students from the RG1, P to the Perceptions of being a first year student questionnaire, and the number to the questionnaire identification number.

"[I] think I've studied enough and so feel fairly confident." [S_1L P42]

Some students mentioned their level of knowledge as contributing to their high level of confidence, while a few mentioned feelings of satisfaction and enjoyment.

Lack of confidence was typically attributed to lack of effort or not receiving high grades for past work:

"I feel that I should definately (sic) pass. I am just a bit regretful that I didn't do more work during the semester." [S_1L P04]

"I wished I had been more thorough in my studying." [S_1L P43]

"I didn't get good enough marks in assignments." [S_1L P26]

RG1 students reporting a high level of confidence made similar comments regarding past grades, amount of work done and level of knowledge and enjoyment. Low levels of confidence, however, were attributed to lack of understanding, difficulty of subject material, lack of interest, irrelevance of course material, not being motivated, not receiving completed work back, being unable to judge, as well as not putting in enough effort or receiving low grades for past work. The following comments illustrate some of the attributions:

"...section let me down due to my poor understanding of the section." [S_1R P54]

"I feel that there is just something that has not yet clicked." [S_1R P68]

"I feel the material is sometimes difficult." [S_1R P63]

"I did not participate as strongly as I would have liked to due to my low level of interest." [S_1R P96]

"Sometimes the topics are interesting. However, the majority of the time I feel restless as the 'passivity' of the course bores me... I feel that there is no direction in the course. We have not been informed of why we are doing Ed101 and its importance." [S_1R P98]

For LSG1 students, worry was mainly associated with their grades. A few students mentioned the amount of work they had done or their level of knowledge or effort. No students mentioned a lack of study time and two students mentioned the difficulty level of the examination.

While similar attribution categories to those for confidence levels emerged for RG1 students, many also mentioned insufficient study time as a factor contributing to their level of worry, for example:

> *"I am worried that I didn't have enough time to study for it."* [S_1R P68]
>
> *"...Need more time to concentrate on all the areas."* [S_1R P63]

A statistically significant difference between LSG1 and RG1 students' perceived level of discomfort when working on a writing assignment was found, with LSG1 students reporting significantly less discomfort than RG1 students $F(1, 115) = 7.50, p = .0072$. A significant difference was also found in reported levels of discomfort when attending the lectures $F(1, 115) = 4.23, p = .0420$, with LSG1 students again reporting less discomfort. However, while the results were statistically significant, correlation ratios (etas) were less than 0.10 (the minimum value for practical significance), indicating little practical significance. No differences were found in reported levels of discomfort when reading the set text, when studying at home or when attending the tutorial. However, while no statistically significant differences in discomfort levels when attending the tutorial were found, the large difference between LSG1 and RG1 students' mean scores was noted. (LSG1 $M = 10.73$, $SD = 15.03$; RG1 $M = 20.08$, $SD = 27.78$).

b) students' academic performance?

In terms of students' academic performance in Ed101, no statistically significant difference between LSG1 and RG1 students' overall scores (derived from student achievement on the course's assessment tasks described in Chapter 3) was found $F(1, 125) = 3.09, p = .0811$. While no significant difference in overall academic performance was found, the mean score for LSG1 students was slightly higher than the mean score for RG1 students (LSG1 $M = 78.21$, $SD = 9.06$; RG1 $M = 75.17$, $SD = 9.31$).

Interpretation of findings

Based on student responses to the MSLQ, it appears that for LSG1 students, providing in-context learning support contributed to their use of learning strategies and metacognitive skills when studying in general for Ed101. The data suggest that students who participated in the learning support program showed an increase in the use of the majority of learning strategies (six out of the nine), with significant increases in their use of rehearsal and metacognitive self-regulation strategies.

While the gains were small, these findings suggest that these first year students increased their use of learning strategies when learning support was provided and when the use of effective learning strategies was encouraged in the classroom. The findings are in line with those reported by Fuller, Chalmers and Kirkpatrick (1995) who found that the higher learning strategy use scores for the students in the experimental and voluntary groups in their study were in a direction that was intended by the program and that the pattern of results confirms that the program was successful. It had a positive effect on students' reported use of selected learning strategies, even though the course demands had not been changed to encourage the use of different strategies (Fuller, et al., 1995).

In contrast, the finding that participating in the regular program was associated with a decrease in the use of the majority of learning strategies (seven out of the nine) may have been due to the lack of structured in-context learning support. Thus, RG1 students may have found it difficult to develop learning strategies in an impersonal environment in which they were expected to be fully responsible for their own behaviour and development, a view supported by the Australian Higher Education Council and Glassick (1997). The small increase in RG1 students' critical thinking, while not significant, may also have been due to the lack of structured support. Unlike students in the LSG1 who were provided with a high degree of structure and direction, both in terms of learning support and subject content, students in the RG1 were more likely left to make their own critical evaluations about how and what they were learning. This view is in line with the views of McKeachie, Pintrich, Lin and

Smith (1986) who suggest that while a high degree of structure supports learning subject content it is less effective in promoting higher level goals, especially with more able students.

The increase in LSG1 students' use of rehearsal strategies could be interpreted as indicating that they adopted a more surface approach to their learning, a finding that has been widely reported see for example, Gow and Kember (1990) and Ramsden, Beswick and Bowden (1986). An alternative explanation may be that, when students have to master a large body of new knowledge in a short space of time, they initially focus on remembering, and, only later, when they have mastered the basic ideas of the new subject, are they be able to aim for understanding (Shuell, 1990). Therefore, using rehearsal strategies may well be entirely appropriate for the task given the context suggested above. According to Biggs (1993), giving students a rote task and then saying that they are adopting a "surface approach" indicates that the concept has been misunderstood. Further, Biggs suggests that not all students who use rehearsal to ensure recall of information have the same intentions. Some students may use rehearsal strategies to achieve surface learning outcomes while others may intend to acquire the factual knowledge as a basis for achieving deep learning (Biggs, 1993).

Notwithstanding the above explanation, the finding that LSG1 students' use of rehearsal strategies was also accompanied by an increase in the use of elaboration and organisation strategies (while not significant) could suggest that they may well have adopted more of a deep approach than a surface approach to their learning. In contrast, the finding that RG1 students' reported increase in the use of rehearsal strategies was accompanied by a decrease in their use of elaboration strategies and a significant decrease in their use of organisation strategies, may suggest that they may have adopted a more surface approach to their learning.

The finding that LSG1 and RG1 students' reported use of time management and help seeking strategies were lower at university when compared to high school, would suggest that time management does not transfer from high school to university and thus, more support is needed to encourage students to establish effective time and

study patterns and to seek help when needed. In terms of time management specifically, the findings may suggest that students did not need to use effective time management strategies in order to meet the learning demands of the course. Alternatively, students' poor use of time may reflect the difficulties they experience when required to manage their own time at university after being used to a structured school environment, as suggested in the report by the Higher Education Council and by Glassick (1997).

In terms of the strategies students used when learning for the tests and for the examination, analysis of student responses to the interview questions supported the MSLQ data findings. Based on student responses to the interview questions, it appears that for LSG1 students, providing in-context learning support was associated with differences in their use of learning strategies and metacognitive skills. For example, the finding that more LSG1 students used elaboration, organisation, metacognitive self- regulation and peer learning strategies may be due to the specific focus of the learning support program in terms of encouraging summary making (elaboration), outlining the chapters and making concept-maps (organisation), providing time in class to focus on planning, monitoring and adapting strategies (metacognitive self-regulation) and focussing on learning collaboratively with peers (peer learning). The finding that there were no great differences between LSG1 and RG1 students' use of strategies when completing the writing task supports this finding, because the lack of difference (other than for the use of metacognitive strategies) may be attributed to the integrated writing support program in both the LSG1 and RG1 classes, which focussed on the procedural, content and composition components of the first writing assignment.

The finding that LSG1 students showed greater knowledge of themselves as learners and the learning environment when learning for the tests and the examination is in line with current research which suggests that encouraging and developing students' metacognitive skills specifically, will result in students developing a greater understanding of themselves as learners as well as of the content they are studying (Janssen, 1996).

The variation in both LSG1 and RG1 students' use of strategies in relation to the task, specifically the finding that students used more rehearsal than elaboration and organisation strategies, and fewer adapting and help seeking strategies when studying for the examination, highlights the need for instructors to be aware of individual task demands and of the range of learning strategies that are required or encouraged when completing specific tasks. This finding is supported by other research which links the nature of the task with students' use of learning strategies (Biggs, 1995; Entwistle, 1995; Entwistle & Entwistle, 1991; Ramsden, 1988; Scouller, 1998; Tang, 1992) and is in line with the views of McKeachie, Pintrich, Lin and Smith (1986) who state that "tasks in classrooms can influence student learning" (p. 79). In relation to help seeking specifically, when studying for the examinations students may not have experienced many difficulties and, therefore, may not have needed to seek help. Alternatively, they may not have sought help because they may have believed that it was "cheating" or they did not report seeking help when interviewed because they did not want the instructor to know that they did not understand.

The finding that many LSG1 and RG1 students reported not spending enough time studying for the final examination may have been due to the scheduling of the examination, which took place in the last week of the semester as opposed to in the examination week. Therefore, the learning context, specifically the limited time and high workload experienced by students, may have influenced the approach they adopted when studying for the final examination. Heavy workload and "time pressure" have been found (see for example Biggs & Moore, 1993) to mitigate metacognitive activity and the use of appropriate learning strategies.

Further, the finding that when studying, especially for the examination, LSG1 and RG1 students reported less use of elaboration and organisational strategies, resorted to "cramming", and put less time and effort into studying is supported by the research of Jones, Slate and Kyle (1992). They found that Teacher Education students failed to record new words and their meanings, did not summarise and recopy their lecture notes, crammed the night before exams, read material in a passive manner and used organisational skills the least when studying. In terms of the strategies used when

completing the set tasks, the finding that the most used strategy was rehearsal is supported by Boulton-Lewis (1994) who found that the most frequently used learning strategy by 869 students in 5 Faculties at Queensland University of Technology was rehearsal.

In terms of LSG1 and RG1 students' feelings about the effectiveness of the strategies they used, LSG1 students were more likely to make statements which indicated that they associated positive feelings with the method they used when studying for the tests, suggesting an association with the high level of learning support provided prior to and after the tests. In contrast, support provided for the examination included students reading and discussing handouts on "how to prepare for a test" and "how to take a test" during class time in the two weeks prior to the examination. Therefore, unlike for the test, the learning support provided relied on students applying what they had read and discussed as opposed to actually using the strategies in class.

The fact that LSG1 students were more likely to make conditional statements suggests that they may have been more aware of how to learn, but for various reasons did not "turn knowing into doing", a finding supported by research which suggests that while most students can clearly articulate what good learning is, only some of them are able to translate their knowledge into action (Garner, 1990; Rothkopf, 1988).

The finding that many LSG1 and RG1 students made statements that indicated that they felt that the method they used when studying for the set tasks "worked" because of the grades they received, may suggest that students focus on the outcomes of their study in terms of passing or failing and not in terms of their understanding of the subject matter or their use of learning strategies. This interpretation is in line with the research findings of Boulton-Lewis (1994) that, in terms of learning outcomes and processes, recall seemed to be the most important outcome for students. Also, students did not take much notice of how people processed information or of cognition as it related to their learning development.

The finding that a large proportion of students believed that they had learnt at high school the method they used when learning for the tests and examination and when completing the writing task, highlights the dominant and influential role of prior learning experiences. This finding is in line with the research of Ramsden, Martin and Bowden (1989) who found a positive relationship between school students' approaches to learning and the learning environment. Radloff (1997) speculates that, although the origins of conceptions and approaches to learning are not well established, "...cumulative formal educational experiences probably play a significant role in their development" (p. 61).

The finding that LSG1 students differed in their responses from RG1 students when studying for the tests and the examination, specifically in terms of them being more likely to mention the positive role of Ed101, suggests that the learning support provided may be associated with differences in some students' beliefs about the origins of the method they used. In addition, the type of support provided, as described earlier, may have contributed to this difference. Further, the finding that both LSG1 and RG1 students mentioned the integrated writing support as contributing to the method they used when completing the writing task again suggests that providing in-context learning support may be associated with differences in students' beliefs about the origins of their learning methods, and may therefore contribute to the methods students use when completing the set tasks. The fact that LSG1 students identified the support provided when studying for the test and the examination and when completing the writing task suggests that they were able to recognise the support when it was provided. Further, the finding that RG1 students identified the integrated writing support as contributing to the method they used when completing the writing task but did not mention Ed101 contributing to the method they used when studying for the tests and the examination suggests also that they were able to recognise the support when it was provided. These findings suggest that learners may be sensitive to the learning environment and that learning experiences may influence their learning beliefs.

The finding that participating in the learning support program was associated with a decrease in students' test anxiety may have been due to the focus on managing anxiety and encouraging the use of effective learning strategies in the learning support program. For example, LSG1 students practised deep breathing techniques and discussed positive self-talk strategies in class prior to the tests. Research has shown that being metacognitive when learning and using a repertoire of strategies may result in a reduction of test anxiety (Spinks et al. cited by Biggs & Moore, 1993). The reduction in LSG1 students' control of learning beliefs and self-efficacy for learning and performance may be attributed to the instructor's input and control, as illustrated by the following:

> *"It was more direct teaching, does that make sense? (How do you mean direct teaching?) Like you asked us to complete different things, whereas others said do it if you want to, It wasn't like you. You asked us to complete different summaries and they were due the next week or something. That never happened before, not in other classes.... It was more structured..."* [$S_1$05]

While the learning support program appeared to be associated with less of a decrease in LSG1 students' intrinsic goal orientations and task value perceptions (perhaps attributable to the inclusion of discussion and group work) and the regular group with RG1 students' control of learning beliefs and self-efficacy for learning and performance, the finding that the majority of the effect sizes were negative for all students indicates that they were less motivated at the end of the semester than at the beginning of the semester. This finding may be associated with amongst other things, students' judgements, the content, the learning tasks, as well as the nature of the subject itself. With regard to the students' judgements, because it was not likely that students would have had any previous experience of Educational Psychology, many may have overestimated their motivational orientations regarding this subject at the beginning of the semester. Considering that the majority of students had only experienced one week of practical classroom observation, it may have been too early in their course for them to see the relevance of some of the content covered. Students may not have been able to see the relevance of the tasks set or the tasks may have not been as relevant as the instructors thought they were. Students may have found the course more difficult than they initially thought it would be and this may have affected their motivational orientations during the semester. This suggestion is supported by

students' reports that they found the Educational Psychology course hard, as illustrated by the following comments:

> *"It is harder than I thought it would be and more work than I thought it would be"* [$S_1$04]

> *"It just seemed to be that you had to apply yourself more in that unit [Ed101], because you had to study for tests and had to do more assignments and more about analysing children's behaviour and things, whereas the other classes were how to teach and how to read stories and this one was more looking into why they do things."* [$S_1$18]

The instructor made similar comments in the Reflective Diary, for example:

> *"Feedback from the students seems to indicate that they find the unit very difficult and demanding...I would guess that the Ed101 unit is as challenging as their A option [elective subject] which is also nominated as being hard and causing them the most worry."* [02/05/95, week 11]

The finding that students' motivational orientations changed over the semester is in line with those reported by Volet and Styles (1992) which suggest that, given the dynamic nature of learning, students will modify their perceptions and goals as they progress through a course and therefore "may gradually find a course more interesting, relevant and challenging than initially expected...[or more] boring, too difficult or irrelevant to their own interests." (p. 424).

There were no statistically significant differences between LSG1 and RG1 students' reported levels of anxiety, confidence or worry about their performance in Ed101. High levels of confidence were attributed by students in both groups to their grades. It appears that, while students may have reported that they were participating in tasks for reasons other than grades and performance (as found on the MSLQ), they nevertheless appeared to rely very heavily on feedback from their performance on assessed tasks to inform their level of confidence. The important role that assessment tasks play, not only in terms of learning strategy use discussed earlier, but also in contributing to students' feelings of confidence, is therefore reinforced. While LSG1 students mainly attributed low levels of confidence and high levels of worry to their lack of effort or past performance, RG1 students included comments that related to their lack of understanding, the difficulty of the material, the relevance of the course,

their level of participation, and their personal orientations. This finding also supports the MSLQ data findings reported earlier, in that RG1 group membership was found to be associated with a significant decrease in students' task value orientations (in terms of interest, importance and use of tasks) and a decrease in their intrinsic goal orientations.

These findings are supported by other research which suggests that students' perceptions of personal competence are affected by their judgments of how well they are learning and understanding the subject matter (Stipek cited by Fuller, et al., 1995) and by their interpretation of the external feedback they receive, such as achievement scores (Fuller, et al., 1995). Further, the present study suggests that students' personal orientations towards the course and their perceptions of the course's characteristics also affect their feelings of personal competence.

The finding that many RG1 students mentioned a lack of study time as contributing to their degree of worry, may be attributed to the final examination being scheduled in the last week of the semester. Further, the finding that students reported having insufficient time to study for the examination supports the finding that the "time pressure" created due to the examination scheduling may have contributed to their learning strategy use being less positive when studying for the examination than when studying for the tests, as reported earlier.

The finding that LSG1 students reported lower levels of discomfort when completing their writing assignments may be attributed in part to the fact that the integrated writing support was provided by the discipline instructor and not by the external tutor, as was the case for the RG1 students. This interpretation is supported by a RG1 student who commented:

> *"...this semester we didn't have project practice with [external tutor], we had them with our lecturer, but I think it was better because they know our needs individually, whereas if you have someone who has come from the outside they don't know your class, they're just talking to a bunch of people who are Group A and that is, I'm not saying that it's their fault, but they just don't know us on a personal level, like learning to know our needs, whereas with your lecturer you know them, you feel more confident about telling them your problems so therefore they can concentrate on the points that you are finding difficult."* [$S_2$12]

Furthermore, as described in Chapter 3, the integrated writing support required students to submit a draft essay which they received a mark out of five for. RG1 students' draft essays were marked by the external tutor, while the discipline instructor marked their final writing assignment (of which the essay formed a major part). The change in audience may have added to RG1 students' feelings of discomfort when completing the writing task. In contrast, LSG1 students' draft essays, as well as their final writing assignments, were marked by the discipline instructor.

In terms of academic performance, there were no statistically significant differences between LSG1 and RG1 students' overall achievement scores. While the finding is disappointing given the positive relationship reported between learning support and achievement in the studies by, amongst others, Fuller (1995) and Volet (1991), it is not surprising. McKeachie, Pintrich, Lin and Smith (1986) note that most research which has focussed on achievement scores as primary indicators of student learning and effective teaching, suggests that the type of teaching method used has little impact on student achievement. They suggest, however, that this may be due to the achievement scores (especially final examination scores) being poor predictors of the differential effects of teaching. In the present study, the finding that there were no differences between LSG1 and RG1 students' grades, may be attributed to amongst other things, the assessment tasks and the subjective nature of the marking. Specifically, the assessment tasks may not have been sufficiently challenging to differentiate between students. It is possible that the short answer tests and examination did not require students to go beyond either the use of rehearsal strategies or the adoption of a surface approach to learning. In addition, the tasks focussed on measuring subject content only and were therefore not good measures of learning outcomes from classroom or other non-textbook learning activities. Further, the tests and examination were based on material that students could study independently of the teaching method used and were constructed to assess only the content that all students had covered. In terms of the subjective nature of the marking, it is possible that marks were awarded differently by different instructors, because no uniform guidelines were used when marking the short answer tests or written project

reports. The researcher was not in a position to alter the assessment items or how they were marked and was not able to obtain all students' marks for each of the assessment tasks.

The finding that there were no differences in LSG1 and RG1 students' academic performance, while disappointing, may be seen in a more positive light. It may in fact be encouraging given that LSG1 students spent less time on the content while focussing on the learning process. Therefore, the finding does not support the view that taking time to focus on the learning process will disadvantage students in terms of their academic performance. This is often given as one reason why instructors are reluctant to teach process. They fear that it will disadvantage students in assessment and that the required assessable content will not be covered.

In terms of the Conceptual Model underpinning the present study, the findings suggest that altering the *Instructional Methods* domain to include the learning support program impacted on the following domains, namely, *Student cognition*, *Metacognition*, *Motivation*, and *Affect* in a number of ways. Firstly, providing support appeared to have a positive impact on students' use of cognitive (selected) and metacognitive (including knowledge and control aspects) strategies. In terms of students' motivational orientations, it appeared that, other than for test anxiety and extrinsic motivation, motivational orientations were less amenable to change through providing learning support, particularly when is was provided using a teacher directed approach. The findings suggest, however, that the learning context, specifically the assessment tasks, the content covered, and the nature and difficulty level of the subject, may have a great influence on students' motivational orientations. In terms of student affect, providing learning support was associated with positive student feelings about the strategies they used when completing set tasks. However, providing learning support did not appear to alter students' overall feelings of anxiety, confidence and worry. Again, as for motivational orientations, student affect appeared to be associated more strongly with the task characteristics domain, notably the assessment tasks, and with students' perceptions about their achievement outcomes. In terms of academic performance, providing learning support did not appear to

impact significantly on student achievement. However, as mentioned, the subjective nature of the marking and the lack of control over the marking made it difficult to examine this factor fully.

The findings supported the Conceptual Model in a number of ways. Firstly, the finding that students' prior learning experiences influenced their learning beliefs and perceptions of their strategy use highlighted the importance of the *Student Entry Characteristics* domain of the Model, reinforcing the view that student entry characteristics are not fixed but interact with the learning environment to affect learning outcomes. Secondly, the finding that the assessment tasks that students completed had significant effects on their learning strategy use and affective reactions, highlighted the importance of the *Task Characteristics* domain of the Model on student learning outcomes. Thirdly, the importance of both positive (for example, learning and integrated writing support) and negative (for example, the lack of a structured environment, time pressures, and high workload) aspects of the learning context on students' use of strategies, their feelings and beliefs about the strategies they used, their motivational orientations and affective reactions, was highlighted by the findings.

Research Question 4: What are the students' and instructor's perceptions and feelings as they engage in a learning support program?

The answers to Research Question 4 are presented in the two sections that follow. The first section provides details about LSG1 students' views of participating in the learning support program and the second section provides a summary of the instructor's views as she implemented the learning support program.

Students' perceptions and feelings

Data on LSG1 students' perceptions and feelings were collected in the interviews conducted at the end of Semester 1, 1995 and by administering questionnaires during

and at the end of the semester. Outcomes of the analysis of the data collected with regard to students' perceptions of the instructional style and instructional strategies used, their perceptions of the support strategies included, and their affective reactions while participating in the class, are presented in the sections that follow.

Students' perceptions of the learning support class

In Phase 2 of the study, the end of semester interviews provided information about LSG1 students' perceptions in Ed101. The relevant question was:

> "Was anything included in Ed101(other than content) that made it different from your other units?"

Students' responses to the question were coded and grouped under two categories namely, "instructional style" and "instructional strategies". "Instructional style" referred to the approach to teaching students believed the instructor had adopted and "instructional strategies" to the teaching strategies students believed the instructor had used. The number and percentage of LSG1 students mentioning the different aspects under "instructional style" and "instructional strategies" which made Ed101 different from other courses are presented in Tables 4.3 and 4.4

Table 4.3
Number and percentage of LSG1 students (n = 15) identifying 6 aspects of the instructional style which made Ed101 different from other courses with descriptions

		Instructional Style	
No	**%**	**Aspect**	**Description**
11	73	"support"	Instructor provides students with support, by being available and/or approachable, creating a positive classroom climate, helping with assessments etc. An affective element is characteristic of this category.
8	53	"instructor global"	Instructor is mentioned as being different (positive) to other instructors, with no specific style being mentioned.
5	33	"challenge"	Instructor provided students with a cognitive challenge in the level of content presented or in skill development.
5	33	"develop"	Instructor acted to develop the students in some way, such as building students' self-esteem, confidence or teaching learning strategies.
4	27	"guide"	Instructor acted as a facilitator of student learning, offering suggestions and guidance.
3	20	"direct"	Instructor acted as a director of student learning, directing, monitoring and regulating students' learning.

Table 4.4
Number and percentage of LSG1 students (n = 15) identifying 12 aspects of the instructional strategies which made Ed101 different from other courses with descriptions

		Instructional strategies	
No	**%**	**Aspect**	**Description**
14	93	"organising"	Instructor used instructional strategies that helped students organise their learning eg providing outlines, timetables, goal setting etc.
5	33	"group work"	Instructor provided opportunities to work in small groups.
4	27	"interactive"	Instructor used strategies that ensured students interacted with the material and each other. Active learning was encouraged.
4	27	"assessment"	Type of assessment in Ed101 different to other courses
4	27	"rewarding"	Instructor provided rewards.
3	20	"materials"	Instructor provided appropriate instructional materials eg worksheets, handouts, questions.
3	20	"explaining"	Instructor explained the topic.
2	13	"variety"	Instructor used a variety of instructional strategies eg discussion, video, guest lecturers etc.
2	13	"clarifying"	Instructor went over the topic or task to make sure the students understood. Instructor made sure that they knew what to do etc.
2	13	"model and practice"	Instructor first demonstrated and then provided an opportunity for the students to practise.
1	7	"overheads"	Instructor used overheads in a different (positive) way.
1	7	"closure"	Instructor consolidated the lesson in a different (positive) way.

In terms of "instructional style", support was identified by the greatest proportion of LSG1 students as making Ed101 different from other courses. In terms of "instructional strategies", the instructor helping students organise their learning was mentioned by the overwhelming majority of students as making Ed101 different from other courses. University's official *Student Appraisal of Teaching* (SAT) questionnaire, which LSG1 students completed at the end of the semester, supported the interview findings with students rating the instructor very highly in terms of responsiveness and organisation. Overall, SAT scores (with 1 = lowest rating and 5 = highest rating) for organisation (4.8; 4.9), feedback (4.8; 4.6), knowledge of the subject (4.8; 4.9), communication (4.9; 4.7), responsiveness (5.0; 4.9), suggested that students were positive about the teaching experienced in the classes in which learning support was included.

The views of the LSG1 students were compared to those of the RG1 students who were also asked, in the interviews conducted at the end of the semester, whether they thought anything was included in Ed101 (other than content) that made it different

from other courses. In relation to the "instructional style" and "instructional strategies" which students had experienced in Ed101, LSG1 students differed in their responses from RG1 students. In particular, in terms of "instructional style", LSG1 students were more likely to mention the instructor supporting, directing, guiding, and developing them. In terms of "instructional strategies", they were more likely to mention organisational strategies, the use of group work, the instructor rewarding learning, and using appropriate instructional materials. RG1 students were more likely to specifically mention that the course was no different from other courses.

LSG1 students were more likely than RG1 students to mention specifically the positive role of the instructor in helping them learn, with students making comments such as the following:

> *"Ed101 was definitely the best class in learning because she [the instructor] had a very good way of teaching and she had a structured and probably the most informative class, the others were a bit vague, and hers was easy to study for and understand. I mean it had the hardest content but the way that she structured it made it very easy to learn and to want to learn it. Like she wrote up on the board before the structure of things you would do, and we would set goals for next week with a partner, like what we were going to do and if next week we had done that goal we would get a lolly or something... She makes you want to learn, others just go on and on, but she sort of encourages you to do as well as you can and then you sort of want to learn really. She expects us to do our best and she says we should know if we have put in the right amount of effort, she only marks it so, yeah she doesn't expect you to all get A's or anything. She puts realistic expectations on it, it is good. Sometimes I didn't like the content, but because of the class and the atmosphere, that was always in the class, it never was boring. If I had a bad teacher it would have been the worst class."* [$S_1$13]

> *"You don't experience it [instructor focussing on assisting students to learn] with any other teacher, so [you] definitely, definitely notice it and it's worthwhile. [At university] you do feel overwhelmed and it sort of makes you more relaxed, not so anxious when you're sitting there. I think it's very good. You'd have like a whole different mental approach to the subject, you don't feel so bad as you would opposed to another subject."* [$S_1$02]

> *"I thought it was good... and prepared us well for the tests and the assignments"* [$S_1$15]

A few LSG1 students mentioned, however, that due to the focus on appropriate learning they felt "stressed" after attending Ed101, for example:

"She [the instructor] was so inspired to study though, which was, sometimes I would just go there and I'd come out of there stressed because I knew that I should be doing more, whereas it never really happened in other tutorials, you'd just sit there and think yeah I'm moving along OK when you're not. When I went to Ed101 I always used to come out thinking Oh I've got, I should really get some more work done." [$S_1$03]

Also, while LSG1 students acknowledged the positive role of the learning support provided in Ed101, it appeared that the support provided may not have been sufficient to bring about changes in their learning, as illustrated by the following student's comment:

"But in Ed101 we were made to stop and think and I did when we had Ed101. We did so much on that sort of thing, we did different ways of studying, we did ways of remembering like those mnemonic things and that sort of thing, and I thought that using them would be helpful. I did sometimes use them but not all the time, but I thought yeah, they made me stop and think... I probably would have just continued on." [$S_1$05]

Further, providing learning assistance may have at times mitigated good strategy use, as illustrated by the following comment:

"I didn't do a summary for the last one [short answer test] because we had those sheets that we had done in class on them so I didn't have to do it, that was an actual summary. So for that one I just studied straight from the book." [$S_1$12]

Students' perceptions of the learning support strategies

LSG1 students' views about the specific learning strategies included in the learning support program in Semester 1, 1995 were gathered by administering the SATL questionnaire in the final tutorial and by asking students to rate the strategies included in the program in the interviews. Outcomes of the analyses are presented below.

The 10 most highly rated learning support strategies identified by LSG1 students on the SATL questionnaire are presented in Table 4.5.

Table 4.5
Top 10 learning support strategies included in the learning support program as rated by LSG1 students (n = 43) on the SATL expressed as percentages

Learning support strategy	Percentage	
	SA*	SD**
Submitting a first draft helped me improve my essay writing	95	0
The numbered feedback sheet was a good way to give me feedback	95	0
Having to write summaries for homework before the tests helped me learn	88	0
Working in small groups in the tutorials was a good way for me to learn	84	2
Outlining the chapters helped me learn	82	0
The handouts (Study strategies, How to study for a test, How to take an exam) were useful to me	75	5
Making a list of the tasks to be completed in the second part of the semester was useful to me	72	0
I learned a lot from the project preparation sessions	70	2
Completing the calendar helped me organise my work	67	2
Discussing anxiety management before the test was helpful to me	63	5

Note. *SA = Strongly Agree representing 1 and 2 and **SD = Strongly Disagree representing 6 and 7 combined on a 7 point Likert scale.

Examples of comments LSG1 students made in their interviews about the learning support strategies are provided to illustrate typical reactions to the five most highly rated strategies, namely, submitting a first draft, getting feedback using a numbered feedback sheet, making summaries before the tests, working in small groups, and outlining the chapters.

First draft

> *"I think it is a great idea [handing in a draft], it is great for first years because it is the first thing they hand in their university life. It gives them good ideas on what is expected of them especially because it is very strict on punctuation and spelling and structure and things like that. It wakes them up really quickly on how important things like that are...Yeah, it is definitely a great idea, and gives the student a lot of insight as to what is expected of them."* [$S_1$08]

Numbered feedback sheet

> *"[I would] look at a number and go to the sheet and see what it had to say whereas if you just marked it and gave us a mark at the end we would still be like, Well what happened? Where did we go wrong? What did we do wrong?, so I liked that."* [$S_1$04]

Summaries before tests

> *"Ed101 helped, it made me do it [make a summary]. Sort of if I was doing it myself and you didn't say to do it that way and bring it in that week I probably would have done it kinda two days before the test or something, but because it was in your mind before it was easier to study for it. It was kinda already there from doing it beforehand."* [$S_1$06]

Working in small groups

> *"It [working in small groups] was informal and you could discuss, and everyone could have a chance to be heard, and you got to hear other opinions as well and then we did get back to the big group and discuss it anyway. You get lost in lectures, you are there for an hour and it is just the lecturer pounding away. In other classes it generally was the lecturer talking more and overheads, a lot of overheads, and note taking, and that got really boring. You would sort of dread ... on Monday afternoon, and say why more notes?"* [$S_1$10]

Outlining the chapters

> *"...the outline, yeah that was good because you would just like put the main words in it, and like then you would know exactly like the main points but then like you would think to yourself, from the major summary what each of those points were. It helped me when I did my summary, I just used the main headings."* [$S_1$15]'

LSG1 students were also asked in the interviews to rate on a scale from 1 - 4 (with 4 = of great value and 1 = no value) 14 of the learning support strategies used in Ed101 (see Appendix 4.6 for students' ratings). The number of students rating each strategy of great value is presented in Figure 4.4.

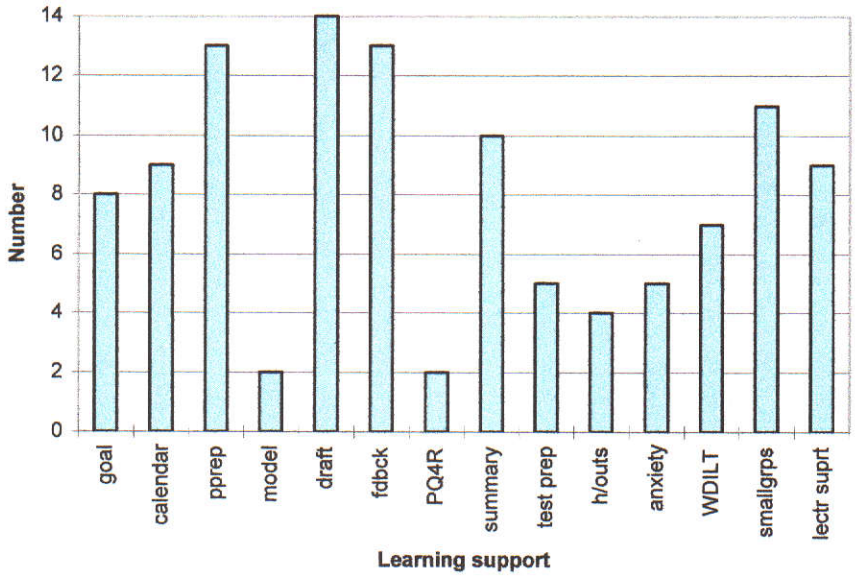


Figure 4.4 Number of students rating of great value 14 learning support strategies included in Ed101 in Semester 1, 1995.

Note. goal = goal setting, calendar = completing the calendars, pprep = project preparation sessions, model = 5-by-3 writing model, draft = essay draft, fdback = numbered feedback sheet, PQ4R = PQ4R reading strategy, summary = summary of the chapter before the tests, test prep = discussing how to prepare for the tests, h/outs = the handouts "How to prepare for a test" and "How to take a test", anxiety = discussing anxiety management before the test, WDILT = being asked "What did I learn today?", smallgrps = working / discussing in small groups, and lectr suprt = instructor focussing on assisting us to learn.

Student interview responses relating to the strategies used in the learning support program generally supported the SATL data findings, with submitting a first draft, getting feedback using a numbered feedback sheet, working in small groups and making summaries of the chapters before the tests also being rated in the top five most highly rated strategies. The only strategy rated more highly in the interviews than on the SATL was the project preparation sessions. Examples of comments made by LSG1 students in the interviews about the project preparation illustrate typical reactions to the strategy:

> *"I learnt a lot from that [project preparation]. I learned how to do introductions which I had never done before... actually going over the theoretical essays, that was really good as well, and how to write an essay, that was very good as well..... I think I learned how to write an essay... So definitely it is worthwhile, because I think it maybe helped me write essays for the rest of my uni life. It's not stressed in year twelve."* [$S_1$02]

"Yeah they [project preparation sessions] did help because we hadn't done like all the referencing before. [In the project preparation sessions] we did referencing and that sort of thing. We had never done that referencing stuff before, contents pages were also pretty new, as well how you number it all and that sort of thing and also outlining the theoretical background. Previously we had just written an essay, we hadn't broken it up into paragraphs like with 1.1, 1.4 and that sort of thing, so that was all helpful. A lot of how to structure and essay I had done before, but it was still good revision to go over it, yeah I don't know but I found them helpful." [$S_1$05]

"[The project preparation sessions] explained what was expected, how to present ideas so not flustered... they were very important... It gave a lot of ideas on what was expected and how to present your ideas..." [$S_1$08]

Students' feelings while participating in the learning support program

LSG1 students' affective reactions were obtained by administering the AACL and the Perceptions survey five times in Semester 1, 1995. The most frequently circled affect adjectives on the AACL are presented in Table 4.6.

Table 4.6
Most circled affect adjectives by LSG1 students on the AACL on 5 occasions during Semester 1, 1995 expressed as percentages

Affect adjectives and percentage									
week 1 (n = 33)		**week 7** (n = 34)		**week 10** (n = 35)		**week 13** (n = 35)		**week 15** (n = 34)	
interested	69	challenged	57	challenged	51	interested	46	satisfied	40
challenged	54	interested	46	interested	37	challenged	37	interested	34
curious	37	satisfied	29	comfortable	29	contented	29	challenged	34
satisfied	31	overloaded	26	calm	29	pleased	29	pleased	34
comfortable	26	pleased	23	satisfied	26	satisfied	26	calm	26
pleased	26	tense	23	productive	26	comfortable	20	tense	23
calm	20	panicky	20	pleased	26	absorbed	17	organised	23
ambitious	17	worried	20	steady	20	happy	17	happy	23
thoughtful	17	absorbed	20	organised	17	calm	17	contented	20
		cautious	20			organised	17	rewarded	20
		productive	20					curious	20
		comfortable	17					comfortable	17

The adjectives consistently circled the most during the semester were *interested, challenged, satisfied* and *pleased.* It appears that more adjectives were circled when students completed the AACL after a formal assessment item, that is, in week 7 students completed the checklist immediately after the short answer test and in week 15 they completed it immediately after the final exam. Also, more negative affect

adjectives (for example *tense, panicky*, and *worried)* were circled at these times. In contrast, when completing the checklist at the end of tutorial sessions which included a focus on content and learning support (that is, weeks 5, 10 and 13), students circled more positive adjectives such as, *comfortable*, *calm*, and *organised.* The percentage of students circling the adjectives *interested* and *challenged* decreased over the semester, while the percentage of students circling *satisfied* and *pleased* increased (see Appendix 4.7).

In terms of confidence, worry and anxiety (as measured by the Perceptions survey), LSG1 students reported experiencing higher levels of confidence (overall $M = 65\%$) than levels of worry (overall $M = 37\%$). Also, peaks and troughs in levels of confidence and worry appeared to be linked to the weeks associated with preparing for or completing assessment tasks, while higher levels of anxiety appeared to be linked to completing formal assessment tasks only (see Appendix 4.8). In relation to feelings of discomfort, LSG1 students reported the highest levels of discomfort when completing a writing assignment, followed by studying, reading the text, attending the lecture and the tutorials. Overall, students' reported feelings of discomfort appeared to decrease over the semester for all situations except for when studying (see Appendix 4.9).

Interpretation of findings

In terms of "instructional style" and "instructional strategies", LSG1 students who had participated in the in-context learning support program reported that they had experienced the learning context, in terms of "instructional style" and "instructional strategies", somewhat differently to those who had not. In terms of "instructional style", LSG1 students emphasised the instructor providing support which took into account their feelings. In terms of "instructional strategies", they mentioned the instructor helping them to organise their learning through assistance with planning, scheduling and goal setting. This finding supports the overall thrust of the program which included a major focus on helping students to manage their learning using a instructional style that acknowledged the role of students' feelings and a supportive

learning climate. The fact that LSG1 students were more likely to make positive comments about the learning support provided suggests that including learning support may be of benefit to students.

The finding that some LSG1 students felt anxious after participating in a class in which learning support was provided may have been because the focus on learning highlighted their ineffective strategy use and, therefore, made them more aware of what they should be doing in terms of managing the learning process as well as the content. This finding is supported by Fuller, Chalmers and Kirkpatrick (1995), who suggest that participating in their intervention program made students more aware of their personal limitations in the skilful use of learning strategies, and this outweighed any increase in student positive perceptions arising from the increased use of the strategies.

The finding that some LSG1 students may have only used or thought about using the strategies when in Ed101, illustrates that students were able to adapt to the demands placed on them by the environment and highlights the influence the learning context had on their learning. It does however raise questions about helping students turn "what they know into what they do".

In terms of the LSG1 students' perceptions of the learning support strategies included in the program and their affective reactions while participating in the program, the findings suggest that, in general, what students value are strategies that promote active learning and that assist and encourage them to complete the work set (especially the assessment tasks), as opposed to only being told about the importance of using appropriate strategies or how to use them. The finding is supported by Boulton-Lewis (1994) who found that the majority of tertiary students' most favoured learning style was "by doing" (p. 400) and that knowledge of the learning process was, in most cases, acquired from being learners prior to entry into university or while studying at the tertiary level and not "...from direct instruction in the area" (p. 401). The findings may also suggest that students are not self-regulated and therefore value strategies that help them to complete the tasks set.

In terms of LSG1 students' affective reactions, while there were general trends in students' reactions, for example interest decreased and feelings of satisfaction increased, the variations in affect adjectives circled suggests that LSG1 students' affective appraisals were influenced by their perceptions of the specific learning situation at any one time, notably, the assessment items. This finding is similar to the outcomes of extensive research conducted on students' goals and working plans by Volet and Lawrence (1990), which revealed that the goals students set reflected their idiosyncratic appraisals of the specific learning situation at any given point in time.

LSG1 students' higher feelings of confidence than worry about their academic performance in Ed101 suggests that they may have believed that they could meet the demands of the course. Further, the finding that the percentage of LSG1 students reporting being challenged in the course decreased over the semester suggests that students were easily able to meet and manage the course demands. Also, the increase in the percentage of students reporting feelings of satisfaction and pleasure may suggest that they were achieving their learning goals.

In terms of the Conceptual Model, the influence that the learning context and *Task Characteristics* domain (notably the assessment tasks) had on promoting student learning was again emphasised. Further, the importance of the *Student Entry Characteristics* domain, in terms of acknowledging students' prior learning experiences and needs, the *Instructional Methods* domain, in terms of using instructional methods students believe assist them to learn, and the *Student Affect* domain, in terms of acknowledging the role that affect plays in learning, was highlighted. In addition, student perceptions and experiences – notably their feedback about the strategies used in the learning support program – highlighted the role that active engagement plays in learning. It also reinforced the view that students are active processors of information and that they are ultimately in control of their own learning behaviour. However, despite knowing what they should do, students may not always turn what they know into what they do.

Instructor's perceptions and feelings

In Phase 2, the Reflective Diary provided information about the instructor's perceptions and feelings as she implemented the in-context learning support program in Semester 1, 1995.

The sections that follow describe the instructor's perceptions and feelings on the basis of Diary entries made during the semester. Analysis of the data revealed that teaching in a way that focussed not only on the content being taught, but also on assisting students to learn the content, was associated with a range of instructor reactions. For the instructor, teaching this way appeared at times to be both more difficult and more psychologically demanding and at other times to be more uplifting and rewarding than teaching content only. Further, the instructor's reactions varied across time and were associated with clearly identifiable factors, namely "instructor factors", "student factors" and "institutional factors". Comments, in the form of quotes from the Diary, are provided to illustrate these factors and to show the pattern of change over time.

Instructor factors

Diary entries revealed that the instructor valued and encouraged active learning and attempted to create a pleasant classroom atmosphere characterised by a mutual respect for the students and the instructor. Teaching was aimed at encouraging learning and included a focus on both the process and content of the subject and of learning. The instructor expressed appreciation for students' thinking and considered students' views, actively seeking their feedback and then acting on it. She attempted to be available to students and actively encouraged them to ask for assistance when necessary. Further, the instructor saw herself as spending a great amount of time reflecting on the class sessions and expending much effort on planning, monitoring and adapting activities.

The importance the instructor attached to teaching and learning, as described above, contributed to her positive and negative reactions when implementing the learning support program. The positive impact is illustrated by the following comments:

> *"I felt I really good after this tutorial. The students participated well. I really enjoyed this class. The idea of a draft is really great it really takes a lot of pain out of assessment. I think it really is a great opportunity for the students and for us to model the correct ways of approaching a written assignment. We really are helping the students and explaining what we want them to do....We did not just throw the students in and let them drown...I am sure the students appreciate it...I do hope that they will all work on the drafts and improve their submissions."* [07/03/95, week 3]

> *"Students were asked to set a goal for next week, to write it down and then tell a friend. The students appear to enjoy this activity and really get right into it!! I am really pleased about that."* [28/02/95, week 2]

> *"I felt the classroom atmosphere was good and that students interacted and made good points. I think they learnt something about the project and its requirements."* [28/02/98, week 2]

The tension created when the instructor's efforts to teach well were not appreciated by all the students and her negative reaction are illustrated by the following comments:

> *"The lesson did not go as well as I had hoped. It is okay for the texts to say you should get students to work out a study strategy or set goals, show them what to do, get them to set goals and develop a study strategy for themselves, model and provide feedback etc. but actually doing it is a different story. It would appear that not all students are eager and keen to learn."* [21/03/95, week 5]

> *"Maybe I am such a perfectionist that I expect them to be the same. Just because I am so hooked on teaching and learning does not mean that they are!! It really feels horrible when you are trying your best but the rewards are not there. I really want them to do well and enjoy the course. It means a lot to me to have a good classroom climate and happy satisfied students, cognitively challenged I must add!!"* [02/05/95, week 11]

> *"Accidentally overheard a student saying, 'only 15 minutes to go'...The irony of the situation is that we were discussing the active role a student has to take in his/her learning, and that it is the student who decides whether he/she is going to learn something!! What a blow, here I am trying my best to help and it is all in vain!!"* [22/02/95, week 1]

Further, comments in the Diary suggested that some content was harder to teach in a metacognitive way and that the instructor was at times unsure about which strategies to include so that students' needs were met, for example:

> *"Perhaps students in adolescent or early adult stages of life have particular needs and maybe I need to try and address them... how will I be able to satisfy all the students all the time?...teaching can be such hard work..."* [21/03/95, week 5]

Student factors

What emerged strongly when analysing the Diary was the impact that student factors had on the instructor's reactions. Student factors included variation in abilities and preparedness, lack of involvement and participation, lack of preparation, poor attendance, negative responses to learning strategy instruction, poor classroom behaviour, lack of motivation, too much focus on assessment and content, difficulty experienced with the content, resistance to change and "knowing but not doing". When these student factors impinged on the instructor's teaching aims, they were generally associated with negative instructor reactions.

Variations in abilities and preparedness

Many Diary comments indicated that the instructor was very surprised at the variation in students' abilities and how underprepared some students appeared to be and, therefore, how clear instructions needed to be. For example, after students were provided with a calendar and a weekly timetable and given time in class to complete the calendar, the instructor commented as follows:

> *"I was amazed at how difficult they found this task. They kept asking me if they were doing it correctly. There was an apparent lack of ability to produce a timetable. On the other hand some students had a diary and were noting everything down in them. I did notice a few timetables, but they were when class times were and not about due dates or learning activities. Greater explanation of how to complete the form may be necessary."* [21/02/95, week 1]

An apparently simple graphing exercise resulted in the following comments:

> *"They were very unsure of how to graph the results. I was amazed, as this is practised over and over in maths and science at school. I had given the axes and put an example on the o/head."* [24/03/95, week 5]

Lack of involvement and participation

Diary entries indicated that the instructor initially experienced difficulty getting the students to participate actively, especially if it was a class early in the morning. The lack of participation was a cause for concern for the instructor, as illustrated by the following comments:

> *"I then asked students to look at what they had written and comment on the points they had found most interesting. Again not much response, a few points were made. Was the video that bad? No they said!! Have students been so beaten into submission that they are afraid to speak up? Is the secondary classroom so unable to cope with viewpoints? Do I ask too much to expect them to be able to contribute in a mature way?"* [16/05/95, week 13]

Further, it appeared that student age influenced classroom participation with mature age students appearing to dominate, for example:

> *"Students answered really well...but once again it was dominated by the two mature age students."* [28/02/95, week 2]

Lack of preparation

Instructor comments suggested that some students did not read the course outline, complete the required readings before tutorial sessions, complete the set "homework" (which normally involved practising the strategies discussed in class, such as making a summary or an outline of keywords etc) and /or attend the lecture (which was scheduled prior to the tutorial and which focussed on the content covered in the tutorial). Students' lack of preparation resulted in the instructor finding it difficult to prepare tutorial activities, as well as to carry out activities that relied on students having some background knowledge, as illustrated by the following comments:

"Amazing how many students had no idea about the content covered, and it was really hard getting the info out of them." and "Students were asked to complete a w/sheet using the text. I then asked them about the theory. Very obvious that not one person in the class had done the reading!!" [14/03/95, week 4]

Further, lack of compliance in terms of completing the set "homework" resulted in the instructor questioning whether it was worth including a focus on learning strategies, as illustrated by the following comments:

"So much of my time is spent on trying to include issues that will help them but maybe I am wasting my time, maybe students want me to cover only content and forget about actually caring about how well they do it!!... Have I failed at the job?? Is it too much to ask??" [21/03/95, week 5]

Poor attendance

When the instructor informally asked students specifically about attendance at the lectures, it appeared that some students only went to lectures where a roll was taken or where a signature was required (asking students to tick a roll merely resulted in them ticking it for one other). Students' poor attendance and lack of preparation created a dilemma for the instructor with regard to how to improve student attendance and motivation, as illustrated by the following comment:

"How do we get the message across that attending the lectures is very important, besides we have done everything possible to make the lectures interesting and interactive, we have gone out of our way to get really good guest speakers. Do we attach assessment to attendance, do we mark a roll?? Again this contradicts the notion of lifelong learners etc what a dilemma!! Very obviously the students had not even read the chapter in the text. How do we cope with this at university, say well it is up to the students and then turn out half baked teachers, would insisting on them reading the text and participating in a class discussion then make them well informed?? How do you get them to be passionate and want to learn??"[16/05/95, week 13]

Negative responses to learning strategy instruction

Implementing some of the learning strategies was met with negative responses from some students, for example:

> *"Students complained about being asked "What did you learn today?", [a student] said 'why do you have to make us think so much in this class?"* [03/03/95, week 3]

These responses by some students resulted in the instructor questioning the value of including a focus on learning strategy use and on being metacognitive about learning, as illustrated by the following comments:

> *"Once again when asking students to discuss the handout on "How to study" I was met with a few rolling eyes...maybe I am making them think of issues that they would rather avoid...It is not very rewarding for the teacher as I am thinking I am doing the right thing helping the students but maybe they are not appreciating my efforts!! I do not want to alienate the students or do things that are irrelevant and boring."* [16/05/95, week 13]

Poor classroom behaviour and lack of motivation

The instructor's surprise at some students' classroom behaviour and motivation levels is illustrated by the following comments:

> *"I am becoming very annoyed that every time I ask the class to talk in groups or with their partners this group of students take it as a sign to have a chat. I know that I cannot expect students to do everything they are asked as in a high-school classroom, but I thought that at university the students would be a little different. It would appear that is not the case. I do appreciate that students are still deciding about their chosen course etc and also believe that some students are only here because they had nothing better to do!! The notion of skill and will keeps coming to mind, it would appear that these students have no will to learn the skill. This can be very de-motivating when I am bending over backwards to please and satisfy the students. I really am on their side, and am worried that I will become bitter and disappointed."* [14/03/95, week 4]

Too much focus on assessment and content

There also seemed to be a mismatch in terms of the instructor focussing on the content and the learning process and the students focussing on the assessment items. While the instructor tried to play down the assessment and focus on the topics and the learning expectations, comments indicated that students were more interested in the assessment, for example:

> *"Students were very keen to look at the assessment items"* [21/02/95, week 1]
>
> *"When I read their feedback all they are talking about is how many assignments they have and how well they do on assessments."* [16/05/95, week 13]

Students were concerned about their performance in terms of grades and wanted feedback on their assessment items to gauge their performance.

Difficulty experienced with content

The difficulty students had with managing the course content also appeared to influence the instructors' perceptions, as illustrated by the following comments:

> *"I asked students how they felt about the topic after a lecture, making a summary, playing bingo and watching a video. They still felt very unsure of themselves and all the new terms. It really seems that the terminology in Educational Psychology is really foreign to most...Feedback from the students seems to indicate that they find the unit very difficult and demanding. Despite all that I am doing!! I would guess that the Ed101 unit is as challenging as their A option which is also nominated as being hard and causing them the most worry."* [02/05/95, week 11]

Resistance to change

Diary entries indicated that it was very difficult to get students to alter their conceptions and change the way they did things, for example:

"It is quite amazing how the idea of having headings in an essay is confusing the students, because they have been told at school that 'an essay should not have headings otherwise it is not an essay'. They are now battling to modify their conceptions to accommodate the Ed101 requirements...The students were really emotional about referencing and the need to reference. They seem to think it is 'stupid'. I ended up asking a mature age student who has a business degree to tell the class why referencing is important. Thought it would be better coming from a peer....The tutorial was a lot more emotional with students really thinking about having to change the way they have written essays at school. They seem very resistant and do not want to." [28/02/95, week 2]

One mature age student commented that students had questioned the role of goal setting, discussing learning, etc. *"Why do we have to do it?"* they had asked. She said that "*no matter how important you tell somebody something is, they have to be ready to learn it and they needed to construct it for themselves*" [04/04/95, week 7].

"Knowing but not doing"

While students often appeared to know what they should be doing they seemed to be unable to actually do it. For example, one student commented after the class had listed all the things they could do to help themselves study on the blackboard, "...but we know all that but how do we do it?". She was quite adamant that she needed some way of making herself do it or wanted someone else to do it for her. She was saying that it is hard when there are other personal and family commitments and things to do and that she was finding it very difficult to resist the distractions. Thus, getting students to do what was asked appeared to be an issue. This problem was further highlighted by the following comments:

"I was thinking about what I could do to try and get the students to do what I am asking. I believe that they need to experience that initially it is hard work but with time the benefits are really evident. I thought that I would ask them to write a summary of a chapter in their text and walk around the class and ask to see it. I felt that I would have to do it, although I did feel a bit school 'teacherish'!! I do not think the students will like it as they are all asserting their new found independence. They do not have to do the work if they do not want to, unlike when at school. I also thought of including it in the unit outline ie homework for the week. I think it might be a good idea to make some good strategies for fostering learning part of the requirements to pass the unit, as opposed to only content knowledge." [07/03/95, week 3]

Despite all the support provided and many students having the best intentions, some still seemed to find it difficult to manage their learning, as illustrated by the following comments:

> *"[class representative said] some members in the class were stressed because they had spent most of their time on the project and were feeling very un-prepared for the short answer test. She said that [one student] had said that she could not believe that she had let herself get into this mess, despite her promise to herself not to. She had said that she thought that she would have learnt especially after her experiences last year. She was angry with herself." [04/04/95, week 7]*

Institutional factors

An unexpected outcome of providing in-context learning support was the impact that it had on the library staff in the Curriculum Resource Centre, as the following comments illustrate:

> *"The librarian... approached me in the staffroom today. She appeared very angry and not her usual self. My first question to her was 'What have I done?'. It appears that the books that we have placed on Closed Reserve are causing problems to the library staff....she said that if we wanted to make so many books available to students we should use the main library as they had the facilities and enough staff to cope with the number of students wanting to use the books on Closed Reserve and that our Closed Reserve was not meant to be used like that... I told her that it was only for 3 weeks and that we had told the library staff this. I tried to explain that because I thought it would be hard for the new students to come to terms with the new concepts in Educational Psychology, uni life, going to the library (which students seem to find very hard) etc, and because we wanted them to complete a draft essay by week 3 of the semester I proposed we scaffold them by placing some Educational Psychology texts in the Closed Reserve section of our local CRC centre for the first three weeks of the semester and that placing them up in the Robertson library would be defeating the purpose...it was after all only for three weeks..."* [22/02/95, week 1]

Shortly after the above incident, all academic staff received an email about the main library's function and the CRC's mode of operation.

The overall course demands also appeared to impact on implementing the learning support program because students began to question the unequal work demands, for example:

"The students were wondering why they had to spend 4 hrs a week on [another course] which they do not find very taxing and only 2 hrs on this very demanding one." [04/04/95, week 7]

At times, students also appeared to be overloaded trying to meet all the demands placed on them, for example:

"[a student] asked if we were strict about all the points outlined as she could not face another set of things to remember and that she would have to do!!" [28/04/95, week 10]

The Diary extracts presented illustrated the instructor's most significant perceptions as she implemented the learning support program. As shown, the factors identified related to three themes, namely; "instructor factors", "student factors", and "institutional factors".

Reactions over time

An interesting aspect of the instructor's perceptions and resulting affective reactions was that they varied across the semester. The pattern of variation is illustrated in Table 4.7. Included in the table are the instructor's affective reactions on 11 occasions during the semester[4] and the factors associated with the reaction namely, "instructor factors", "student factors" and "institutional factors", (Note: The factors which the quote refers is included in brackets, that is, (T) = Instructor, (S) = Student and (I) = Institutional).

[4] Diary entries were made in 11 of the 15 weeks of the semester. Diary entries were not made in week 9 because it was the Easter week free of class contact, in week 12 because students were out on teaching practice, and in week 15 because there was no tutorial. Data were missing for week 14.

Table 4.7 ***Instructor affective reactions and a summary of selected factors associated with the reaction on 11 occasions during Semester 1, 1995***

	week 1	week 2	week 3
Affective reaction	Negative	Mixed	Mixed
Factors associated with reaction	Negative teaching expectation mismatch (T) Negative response to teaching (T) Negative variation in ability and preparedness (S) Negative poor classroom behaviour and motivation (S) Negative library response (I)	Positive responses to teaching (T) Negative variation in abilities and preparedness (S) Negative lack of preparation (S) Negative resistance to change (S) Negative classroom behaviour (S) Negative dominance by mature age students (S)	Positive responses to teaching (T) Positive response to strategy instruction (T) Negative poor classroom behaviour (S) Negative lack of involvement and participation (S) Negative dominance by mature age students (S)
	week 4	**week 5**	**week 6**
Affective reaction	Mixed	Negative	Mixed
Factors associated with reaction	Positive responses to teaching (T) Positive response to strategy instruction (T) Negative variation in abilities and preparedness (S) Negative student behaviour and motivation (S) Negative lack of involvement and participation (S) Negative response to strategy instruction (S) Negative resistance to change (S)	Negative unsure of strategies to include (T) Negative responses to teaching (T) Negative hard to teach content (T) Negative resistance to change (S) Negative variation in abilities and underpreparedness (S) Negative response to strategy instruction (S)	Positive response to teaching (T) Positive response to strategy instruction (T) Negative hard to teach content (T) Negative unsure of strategies to include (T) Negative lack of preparation and attendance(S) Negative knowing but not doing (S) Negative difficulty with content (S) Negative course demands (I) Negative response to strategy instruction (S)
	week 7	**week 8**	**week 10**
Affective reaction	Mixed	Mixed	Mixed
Factors associated with reaction	Positive response to teaching (T) Negative response to assessment (T) Negative lack of preparation (S) Negative knowing but not doing (S) Negative course demands (I)	Positive response to teaching (T) Positive response to strategy instruction (T) Negative difficulty with content (S) Negative response to strategy instruction (S)	Positive responses to teaching (T) Positive response to strategy instruction (T) Positive participation and attendance (S) Negative response to assessment(S) Negative difficulty with content (S) Negative course demands (I)
	week 11	**week 13**	
Affective reaction	Negative	Negative	
Factors associated with reaction	Negative response to teaching (T) Negative lack of involvement and participation (S) Negative lack of motivation (S) Negative difficulty with content (S) Negative response to assessment (S)	Negative response to strategy instruction (T) Negative lack of preparation and attendance (S) Negative variation in abilities and preparedness (S) Negative lack of participation (S) Negative difficulty with content (S)	

Interpretation of findings

It appears that the instructor's affective reactions were influenced by her idiosyncratic perceptions of the specific learning situation at any one time and varied across the semester. Further, it appears that positive reactions were mainly associated with "instructor factors" and negative reactions with "student" and "institutional" factors.

The finding that the instructor's reactions varied over time and they were more negative towards the end of the semester, is supported by the research of Duffy and Jones (1995). They found that the final weeks of semester were marked by feelings of stress and isolation and that the end of semester is a time "when fatigue is a way of life" where "professors and students alike talk about 'getting through'." (p. 205). They suggest also, as did the present study's findings, that the "synergy from attentive students is one of the most powerful rewards for professors" and that "in contrast, the apathy of inattentive students is one of the greatest challenges" (p. 163).

The overall finding that teaching both the content and the learning process was associated with both positive and negative instructor reactions is supported by the perceptions reported by Kirkpatrick, Fuller and Chalmers (1993). These researchers mention that, as opposed to teaching in a traditional way, providing support was "more time consuming" and "required greater instructor involvement" which caused "some discomfort initially" (p. 13).

In terms of the Conceptual Model, the findings suggest that instructors' perceptions of the students' reactions to providing learning support and their involvement in learning may have a direct impact on instructors' affective reactions to, and beliefs and attitudes about, their teaching, and therefore on their selection and use of instructional methods. Thus, the instructional methods selected by instructors are possibly mediated by the instructors' beliefs an attitudes about student involvement in self-regulated learning as well as the task characteristics.

Research Question 5: From the students' perspective, which aspects of the instructional context specifically, instructional style and instructional strategies, facilitate their learning?

Students' reactions to their learning experiences in the tutorial classes were gathered through interviews. As reported earlier, the interview questions focused on students' use of learning strategies, their beliefs and feelings about their learning strategy use and their views on the learning context. One aspect of the learning context related specifically to the instructor's role in supporting students' learning. The questions relating to the instructor's role were:

> "What should your instructor do to assist you learn?"
> "What do you want them to do to specifically help you?"
> "What sort of teaching strategies help you learn the subject?"

Responses to the above questions were coded and grouped under two categories; "instructional style" and "instructional strategies". "Instructional style" referred to the approach to teaching students believed instructors *should* adopt and "instructional strategies" to the strategies students believed the instructor *should* use to assist them to learn. The number of students mentioning the different aspects under the two categories are presented below.

Instructional style

Students' responses to the first two questions are summarised in Table 4.8. Excerpts from the interview transcripts are provided to illustrate the type of responses given by the students, and as exemplars for each category.

Table 4.8
Number and percentage of students (n =21) identifying 6 aspects of the instructional style which assist them to learn with descriptions

		Instructional Style	
No	**%**	**Aspect**	**Description**
18	86	"support"	Instructor provides students with support. Support may be in the form of being available and/or approachable, creating a positive classroom climate, helping with assessments etc. An affective element is characteristic of this category.
13	62	"direct"	Instructor acts as a director of student learning. Instructor directs, monitors and regulates students' learning.
11	52	"guide"	Instructor acts as a facilitator of student learning, offering suggestions and guidance.
6	29	"challenge"	Instructor provides students with a cognitive challenge. Challenge may be in level of content presented or in skill development.
4	19	"develop"	Instructor acts to develop the students in some way. Examples are the instructor building students' self-esteem, confidence or teaching learning strategies.
3	14	"none"	Students believe that it is not up to the instructor to assist them. They believe that the responsibility for learning lies with them.

Note. "Instructional style" refers to the approach to teaching which students believe the instructor *should* adopt

Students identified six aspects of the instructor's style which they believe assist them to learn. The overwhelming majority of students identified support in the sense of instructor approachability, availability, help with assessments and creating a positive climate as being important to their learning. This is illustrated by the following student comments:

> *"[I want instructors to] be helpful, always be open to views, be friendly and that sort of thing. To be approachable so you can ask questions, then you will not be as worried about asking."* [$S_1$05]

> *"I think to learn you've got to feel that the lecturer wants to be there and is involved in what we are doing like he enjoys what we are saying like he is really wants you to know, give your stuff, that you've got something, that you feel passion, yeah. At least know your name."* [$S_1$03]

Students also mentioned that the instructor directing their learning would assist them to learn. Requests for instructors to direct, monitor and regulate their learning are illustrated by the following comments:

> *"Not just giving us a chapter and leaving us on our own. I had that [just being given the chapter and being left on own] in Yr 12 for a couple of classes, they said just read this chapter do these questions, and I didn't learn like that."* [$S_1$05]

"Definitely setting homework. It is invaluable. I mean it is hard for a student to know what questions to do or what chapters to read but if the lecturer outlines it for them it's impossible to go wrong." [$S_1$08]

"If they give you an activity to do, or tell you to do something for next week they should follow-it up better than a lot of them do, if they don't check students don't do the work. Because if you don't do it and they don't follow it up properly then next time they ask you to do something you just can't be bothered doing it." [$S_1$04]

"I think basically making us hand in a summary when we have missed a class or don't miss a class or whatever. That helps a lot it really does..." [$S_1$01]

In addition, just over half the students mentioned that the instructor acting as a guide would assist them to learn, for example:

"I suppose in ... the teacher would prompt us because sometimes she would say, pretend you are a fire and everyone would do the same thing, and she would then give us other ideas. Make us think in different ways, sort of guide us, that really helped." [$S_1$20]

"Like they give a list of text books at the start of the semester but there are 10 books there, how do you know which book is referring to which subject? If at the end the lecturer said I got my information from this book in this chapter if you want to go an have a look, that is one way of doing it." [$S_1$08]

Just under one third of the students mentioned that they viewed challenge as critical to assist their learning, making comments such as:

"Perhaps go more in depth with the actual course. Some units are very basic. I understand teaching is you know practical but sometimes you feel that you go in there and you're not really learning much. That you might just bring the book to the class. That to me is silly...You're not really benefiting from it. ...but like I said some other units need a bit more theory." [$S_1$02]

The instructor assisting student learning by developing students' self-esteem, confidence or learning strategies was mentioned by a few students, for example:

"Lecturers could build students' confidence...in a way it would probably be good for me, once I started getting a few right I would be more willing to answer. A lot of the time I do know the answers but I don't say them.." [$S_1$11]

"I suppose [instructors could help students with] studying. I suppose how to study effectively, because most of us don't have any study program at all." [$S_1$18]

"I think we should be taught note taking as well, because we are all really bad at that. There are a lot of things I feel I should have done personally. Everyone writes down everything and you get all panicky, you think I better write down everything just in case." [$S_1$19]

The view that the responsibility to learn was not with the instructor but was entirely with students was expressed by the least number of students:

> *"I really don't think it is up to them [instructors] really. I don't think that they should be made to say to me right you have to do this work and that sort of thing."* [$S_1$01]

Instructional strategies

Students' responses to the question "What sort of teaching strategies help you learn the subject?" are summarised in Table 4.9. Excerpts from the interview transcripts are again provided to illustrate the type of responses given by the students, and as exemplars of the top 5 aspects.

Table 4.9
Number and percentage of students (n = 21) identifying 13 aspects of the instructional strategies which assist them to learn, with descriptions

		Instructional strategies	
No	**%**	**Aspect**	**Description**
20	95	"organising"	Instructor uses instructional strategies that help students organise their learning eg providing outlines, timetables, goal setting etc.
18	86	"interactive"	Instructor uses instructional strategies that ensure that students interact with the material and each other. Active learning is encouraged.
14	67	"variety"	Instructor uses a variety of instructional strategies eg discussion, video, guest Instructors etc
14	67	"group work"	Instructor provides opportunities for students to work in small groups.
11	52	"materials"	Instructor provides appropriate instructional materials eg worksheets, handouts, questions etc
10	48	"reinforcing"	Instructor reinforces the content taught by presenting it in a variety of ways.
10	48	"clarifying"	Instructor goes over the topic or task to make sure the students understand. Instructor makes sure that they know what to do etc.
6	29	"model and practice"	Instructor first demonstrates and then provides an opportunity for the students to practise.
6	29	"note taking"	Instructor dictates notes. Students take notes while instructor is talking.
5	24	"explaining"	Instructor explains the topic by talking or lecturing.
3	14	"being a role model"	Instructor is a role model to the students. Instructor practices what he/she preaches.
2	10	"questioning"	Instructor asks the students questions.
2	10	"feedback"	Instructor gives feedback to the students.

Note. "Instructional strategies" refers to the instructional strategies which students believe the instructor *should* use.

Students identified 13 aspects of "instructional strategies" which they believe assist them to learn. They overwhelmingly supported strategies that help them organise their learning, making comments such as:

> *"Definitely need to have guidelines, you know the unit outline? That's really handy to have because you have got, you know when things are due, you know what is expected of you week by week, and then it is up to you to carry out everything accordingly."* [$S_1$10]

> *"Also the setting out on the board of what we have to cover, because you can plan and sort of see where we are going."* [$S_1$01]

> *"One of the most brilliant ones I like that you do is the goal setting. Where you breeze in and say "Right set a goal and make sure you do that". By the next time you come looking you expect it. We do those goals. Even if they are something as simple ... whatever. It's just a real big incentive to me. I sort of think, wow, if I get it done I feel good. I really like that."* [$S_1$01]

They also identified strategies that promoted active learning, for example:

> *"I guess I have experienced different types of lecturers. One where the lecturer talks at you and one where they talk with you. When they talk with you that's great, you learn more and you can interact and you can chat with them about things and ask questions."* [$S_1$01]

> *"The best lectures I have been to is where the lecturer has actually...made us stand up and get involved, because you then stay awake and not that they are all that boring but, we just need to be more involved, instead of just putting up overheads, because all a first year is going to do is write down everything that comes up."* [$S_1$19]

> *"If we work on the hand-outs in class it is good, but not if you just get given them to keep, because I just tend to file them away. I tend to just put them in my file and never look at them again."* [$S_1$04]

> *"Not a great deal of note taking as such, but quite a bit of class discussion about the issues. A little more active, you might give a suggestion, it might not necessarily be right, but at leat it is a communication thing, from the question and the answers and eventually the answer is drawn out, in a way."* [$S_1$21]

In addition, two thirds mentioned that using a variety of instructional strategies and working with their peers in groups would assist them to learn the subject, for example:

> *"Yes sort of videos that are relevant and discussions are good after the video. That's really good. Then perhaps she could back up theory on the board or something, so you reinforce the video and the discussions perhaps. Not necessarily in that sequence. That sort of thing."* [$S_1$02]

"Not too many overheads, where it's overhead, overhead, because then you get into overhead mode where you don't even listen to anything they are saying and you just write the whole time and you don't even know what you're writing." [$S_1$03]

"Make it more fun, but I don't know how you could possibly do it for some of the stuff they teach us. But it is better than just standing there and just lecturing people... Examples are good when they give you like real life examples." [$S_1$14]

"Group work is good as you are more likely to speak up in a group than in front of the whole class. Everyone likes group work, you do sometimes get off the topic, but I find it more effective to have my say or hear what other people have to say." [$S_1$11]

Just over half the students mentioned the use of instructional materials, for example:

"In one of the units we used to get worksheets to do every week and that helped." [$S_1$17]

Interpretation of findings

Most of the students interviewed were able to articulate their views of the role of the instructor in supporting their learning, a finding supported by Clarke (1998, p. 107) who concluded that "students are capable of discriminating between what they consider to be good and bad educational experiences". In the present study, in terms of "instructional style", the majority of students mentioned support in terms of instructor approachability, instructor availability, and the instructor's ability to create a positive learning climate. In terms of "instructional strategies", the majority of students wanted instructors to use strategies that helped them organise their learning and that promoted active learning. This finding is also supported by Clarke (1998, 107) who found that "students felt that their learning was helped when learning experiences were practical and experiential". Thus, in the present study and from the students' perspectives, what they considered helped them learn was psychological support and help in managing the learning environment. This view is in contrast to the typical emphasis which instructors place on transmitting content while leaving the responsibility of "how to learn" to students.

The views students expressed about the instructor's role may reflect their previous learning experiences at school and their currently held conceptions of learning. For

many learners the experience of being a first year student in a tertiary institution is qualitatively different from that of being a high school student. Also, students at this early stage of their tertiary learning are likely to view learning in terms of acquiring knowledge rather than constructing meaning, a view supported by Boulton-Lewis (1994).

In terms of the Conceptual Model, the findings again emphasised the importance of the learning context, the need to consider students' prior learning experiences (*Student Entry Characteristics* domain), the influence of instructional style and strategies on student learning perceptions (*Instructional Methods* domain), the role of affect in learning (*Student Affect* domain) and the view that students are active processors of information.

In summary, in this chapter, how altering the *Instructional Methods* domain of the Conceptual Model to include the learning support program implemented in Phase 2 impacted on student cognition, metacognition, motivation, affect and academic performance, was explored. Specifically, quantitative and qualitative data gathered from students who participated in the in-context learning support program and those who did not was presented and used to explore whether providing learning support enhanced student learning in terms of a) the learning strategies they used, including their use of cognitive, metacognitive and resource management strategies, their feelings about the effectiveness of their strategies, and their beliefs about the origins of their strategies b) students' motivational orientations, including intrinsic, extrinsic, task vale, control of learning beliefs, self-efficacy and test anxiety orientations c) students' affect, specifically their anxiety, confidence, worry and discomfort, and d) students' academic performance, specifically their overall achievement on the course's assessment tasks. Throughout the chapter findings were interpreted and their relationship to the Conceptual Model underpinning the study highlighted.

Furthermore, data was also presented and used to explore students' reactions to participating in the learning support program, specifically in terms of their perceptions about the learning support class and the learning support strategies included, and their

feelings about participating in the learning support program. In addition, the instructor's reactions, specifically her perceptions and feelings about implementing the program, were presented and discussed. Specific factors which were associated with both positive and negative instructor reactions were identified. Finally, students' views about the learning context were presented and discussed. Specifically, students' views about the instructional style and instructional strategies which they believed facilitated their learning were highlighted.

In Chapter 5, the outcomes of altering the Instructional methods domain to include the expanded learning support program in Phase 4 of the study and how this impacted on students' cognition, metacognition, motivation, affect and academic performance are presented and discussed. In addition, students' and the instructor's views of participating in an expanded learning support program are presented. Also, the appropriateness of providing learning support in terms of length and timing and the relationship between learning behaviour and academic performance are specifically explored.

Chapter 5

Results and Interpretation: Phase 4

Research Question 3: Does providing in-context learning support enhance student learning in an Educational Psychology course in terms of:

a) the learning strategies students use, their feelings about the effectiveness of their strategies, and their beliefs about the origins their strategies?
b) students' motivational orientations?
c) students' affect, specifically students' anxiety, confidence, worry and discomfort?
d) students' academic performance?

Interpretation of findings

Research Question 4: What are the students' and instructor's perceptions and feelings as they engage in a learning support program?

Students' perceptions and feelings
Interpretation of findings
Instructor's perceptions and feelings
Interpretation of findings

Research Question 5: From the students' perspective, which aspects of the instructional context, specifically instructional style and instructional strategies, facilitate their learning?

Instructional style
Instructional strategies
Interpretation of findings

Research Question 6: What is the most appropriate length and timing for a program designed to enhance first year students' learning?

Length
Timing

Research Question 7: Is there a relationship between learning behaviour and academic performance?

Cognition and academic performance
Metacognition and academic performance
Motivation and academic performance
Affect and academic performance

In this chapter, Research Questions 3, 4, and 5 as they relate to the in-context learning support provided in Phase 4 of the study, specifically the expanded version of the program implemented in Semester 1, 1995, are addressed. As in Phase 2 of the study,

to assess the effectiveness of the program, quantitative and qualitative data from students' responses to self-report instruments and to interview questions were gathered. The first section of the chapter focuses on changes in students' learning strategy use, their motivational orientations, their affective reactions and their academic performance. The second section outlines the students' and instructor's reactions to the expanded learning support program. The third section presents students' views of the learning context, specifically relating to students' views about the "instructional style" and the "instructional strategies" they believe instructors should use to assist them to learn.

Following Research Questions 3, 4, and 5, Research Questions 6 and 7 are addressed. Specifically, the outcomes of providing learning support in Phases 2 and 4 of the study are used to explore the most appropriate length and timing for providing learning support. A discussion of the relationship between student learning and achievement concludes the chapter. As in Chapter 4, the findings are discussed in terms of the research on student learning and the Conceptual Model underpinning the study. Again, the findings are discussed with the knowledge that any findings of difference between groups should be considered with caution.

Research Question 3: Does providing in-context learning support enhance student learning in an Educational Psychology course in terms of:

a) the learning strategies students use, their feelings about the effectiveness of their strategies, and their beliefs about the origins of their strategies?

To address Research Question 3, data gathered by administering the MSLQ and by interviewing a sample of students were used. As in Phase 2, data related to studying in general as well as to studying for the tests, examinations and when completing the writing task. The findings from the data analyses are presented in the sections that follow.

Learning strategy use when studying in general

Effect sizes, calculated from students' responses to the Learning Strategies section of the MSLQ, are presented in Figure 5.1, with details provided in Appendix 5.1. Students' responses related specifically to the learning strategies they used in Ed101 at the end of Semester 1, 1995 (pretest) and in Ed102 at the end of Semester 2, 1995 (posttest). Differences in learning strategy use by students, as reported in the pretest and the posttest, are shown as effect sizes.

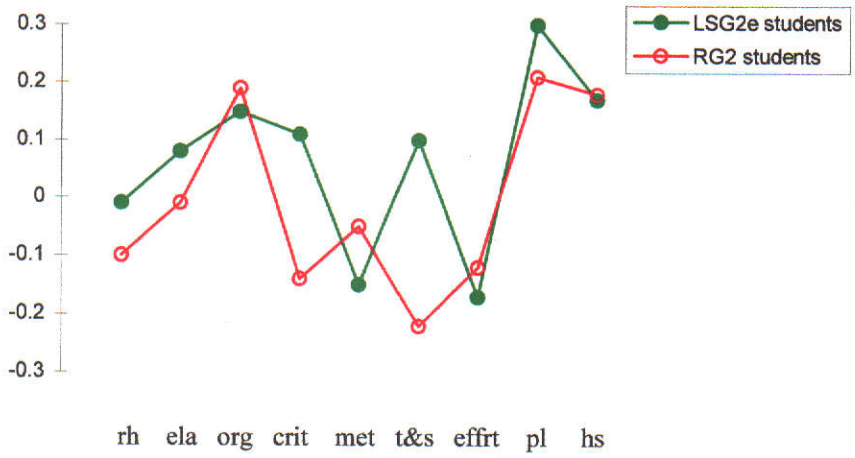


Figure 5.1 MSLQ "Pre - Post" effect sizes for learning strategy use by LSG2e and RG2 students.

Note. LSG2e $n = 17$; RG2 $n = 46$. rh = rehearsal, ela = elaboration, org = organisation, crit = critical thinking, met = metacognitive self-regulation, t&s = time and study environment, effrt = effort regulation, pl = peer learning, and hs = help seeking. Positive values indicate higher post than pre values.

Effect sizes were more positive for the LSG2e (comprising mostly students who had also participated in the learning support program in Semester 1) than the RG2 (comprising students who had not participated in the learning support program in Semester 1 or 2) for students' reported use of all strategies other than organisation, metacognitive self-regulation and effort regulation strategies. Large pre-post effect size differences between the LSG2e and RG2 groups for students' reported use of critical thinking and time and study environment strategies were shown.

Overall, being in the LSG2e was associated with an increase in students' use of six out of the nine strategies (elaboration, organisation, critical thinking, time and study environment, peer learning and help seeing), with their use of peer learning strategies ($g = 0.30$) being significant. Participating in the RG2 was associated with an increase in students' use of three out of the nine learning strategies, (organisation, peer learning and help seeking), with their use of peer learning strategies ($g = 0.21$) also being significant. Further, membership of the RG2 (but not the LSG2e) was associated with an educationally significant decrease in students' use of strategies to manage their time and study environments ($g = -0.22$).

Strategy use when learning for the tests and the examination, and when completing the first writing task

Eight students from the LSG2e and eight from the RG2 were interviewed at the end of Semester 2, 1995. In the interviews, students were asked to respond to three questions regarding their use of learning strategies, namely:

> "In Ed102 you had to complete three short answer tests. Do you have any particular method for preparing for this type of test?";
>
> "Please think back to the final examination in Ed102. Would you please explain how you went about preparing for the examination."; and
>
> "In Ed102, for the project (remember the one on assessment?) you were asked to write a test, administer it and then to write a report outside class time. Would you please explain the method you used to help you plan and write the theoretical background section."

Student responses were coded across all interview documents. The same coding categories as those used in Phase 2 of the study were used (see Table 3.5 in Chapter 3). The number and percentage of students mentioning the use of cognitive, metacognitive and resource management strategies are summarised in Table 5.1.

Table 5.1
Number and percentage of LSG2e (n = 8) and RG2 (n = 8) students mentioning the use of cognitive, metacognitive and resource management strategies when studying for the tests and the examination, and when completing the writing task

	tests		examination		writing task	
Strategy	LSG2e	RG2	LSG2e	RG2	LSG2e	RG2
cognitive strategies						
rehearsal	8 (100)*	8 (100)	8 (100)	8 (100)	7 (88)	7 (88)
elaboration	7 (88)	7 (88)	3 (38)	5 (63)	8 (100)	8 (100)
organisation	7 (88)	5 (63)	6 (75)	3 (38)	7 (88)	7 (88)
metacognitive strategies						
planning	4 (50)	4 (50)	5 (63)	5 (63)	8 (100)	8 (100)
monitoring	5 (63)	5 (63)	6 (75)	6 (75)	8 (100)	3 (38)
adapting	3 (38)	2 (25)	4 (50)	3 (38)	7 (88)	5 (63)
knowledge self	3 (38)	4 (50)	5 (63)	4 (50)	7 (88)	6 (75)
knowledge task	4 (50)	3 (38)	4 (50)	4 (50)	7 (88)	6 (75)
knowledge environ	0	2 (25)	1 (13)	0	4 (50)	1 (13)
resource management						
time & study environ	3 (38)	1 (13)	1 (13)	1 (13)	3 (38)	2 (25)
effort regulation	2 (25)	1 (13)	3 (38)	0	2 (25)	1 (13)
peer learning	3 (38)	0	3 (38)	2 (25)	3 (38)	5 (63)
help seeking	0	0	0	0	3 (38)	3 (38)

Note. * figure in brackets denotes percentage of the total in the group.

When learning for the tests and the examination, while a similar proportion of LSG2e and RG2 students were likely to report using rehearsal, elaboration and metacognitive strategies, a greater proportion of LSG2e students were likely to report using resource management strategies, specifically, strategies to manage their time and study environments, to regulate their effort, and to learn with peers.

When completing the writing task, LSG2e students were more likely than RG2 students to report using metacognitive strategies, notably, monitoring and adapting strategies, and knowledge of the environment. In contrast, RG2 students were more likely to report using peer learning strategies. However, use of these strategies appeared to be associated with clarifying the task.

In terms of the strategies used when completing the set tasks, rehearsal was the most used strategy when studying for the tests and examination, and elaboration when completing the writing task. Resource management strategies were used the least by all students, especially when studying for the examination. Elaboration and organisation strategies were more likely to be used by students when studying for the tests and when completing the writing task than when studying for the examination. Completing the writing task appeared to be associated with the use of more strategies by a greater proportion of students.

Feelings about effectiveness of learning strategies

In the interviews, students were asked to explain how they felt about their learning strategies. The number and percentage of LSG2e and RG2 students mentioning different feelings about the strategies they used when studying for the tests and the examination, and when completing the writing task, are presented in Table 5.2.

Table 5.2
Number and percentage of LSG2e (n = 8) and RG2 (n = 8) students mentioning feelings about the learning strategies they used when learning for the tests and the examination, and when completing the writing task

	tests		examination		writing task	
Feeling	LSG2e	RG2	LSG2e	RG2	LSG2e	RG2
"works"	6 (75)*	3 (38)	1 (13)	4 (50)	6 (75)	7 (88)
"good"	2 (25)	1 (13)	1 (13)	0	2 (25)	2 (25)
"confident"	1 (13)	0	0	1 (13)	4 (50)	0
"helps learn"	4 (50)	0	0	0	0	0
"easiest way"	1 (13)	1 (13)	0	0	2 (25)	2 (25)
"does not work"	0	1 (13)	0	0	0	0
"not good"	0	2 (25)	2 (25)	2 (25)	1 (13)	1 (13)
"needs changing"	3 (38)	2 (25)	2 (25)	4 (50)	0	2 (25)
"takes time"	3 (38)	1 (13)	1 (13)	0	0	0
"felt unprepared"	0	0	0	0	0	0
"no better way"	0	0	0	0	1 (13)	0
"unsure"	0	0	2 (25)	0	0	0
"conditional"	2 (25)	2 (25)	1 (13)	1 (13)	1 (13)	1 (13)

Note. * figure in brackets denotes percentage of the total in the group.

When studying for the tests, LSG2e students were more likely than RG2 students to report that their strategies worked, that they were "good", and/or that they were associated with feelings of greater understanding in terms of learning the subject. In contrast, RG2 students were more likely to make negative comments about their method in terms of it not working or not being good. LSG2e students were however, more likely than RG2 students to make comments about their method being time consuming.

When studying for the examination, RG2 students were more likely than LSG2e students to make comments about their method working as well as needing to be changed. Comments suggested, however, that students from both groups appeared to feel less positive about the method they used when studying for the examination in terms of it not being "good" or needing to be changed.

When completing the writing task, while both LSG2e and RG2 students indicated that they felt the method they used worked, LSG2e students were more likely than RG2 students to make positive comments about their method in terms of it leading to feelings of confidence about their writing, as illustrated by the following comments:

> *"I felt better after I handed it in, the first one I handed in I thought that is the most terrible thing I have ever written..."* [$S_2$06]
>
> *"I felt a lot better after I had got back and I had been able to make the changes, because I figure I was more even more on the right track than what I was before."* [$S_2$02]
>
> *"I felt better the second time, when I did it, looked it up and I ended up, I finished mine and I ended up having like a few friends over and then we just sort of discussed and decided I sort of had the right idea, so I was quite happy."* [$S_2$04]

In contrast, RG2 students were more likely to make comments suggesting they were confused and did not know what to do, which led to feelings of stress and anxiety, for example:

"I didn't have any idea of what I was supposed to write, so generally we went running around to everyone and saying do you know what we have to write this theoretical background I don't understand it... none of us really knew at all, that was the assignment I hated the most it was really horrible, I just didn't like it at all... most of the time we handed it in and we thought that was a horrible essay and I think I am going to do really bad on it because you didn't feel confident you had done a good job...to just alleviate all that stress would be a good idea" [$S_2$18]

In summary, LSG2e students were more likely than RG2 students to make positive comments about the method they used when learning for the tests and when completing the writing task. In contrast, RG2 students were more likely than LSG2e students to make positive comments about the method they used when studying for the examination.

Beliefs about origins of learning strategies

In the interviews, students were asked from where they thought they learnt the method they used when completing the set tasks. A summary of the findings is presented below, with details provided in Appendix 5.2.

When learning for the tests and the examination, while the majority of LSG2e and RG2 students believed that high school contributed to the method they used, LSG2e students were more likely than RG2 students to mention university as influencing their method. Specifically, half of the LSG2e students mentioned Ed101 and Ed102 as contributing to their method. Comments made by LSG2e students included:

"Getting together a bit from Ed102, because we really never thought about that before." [$S_2$02]

"...and then it was more fine tuned in Ed psych [Ed102] because it was a little bit more on studying techniques, with the presentations on mnemonics and things like that." [$S_2$10]

"I've sort of being using it quite a while, like since last semester...[a student] she talked about it in class [Ed101], remember that, and I thought I'll try it and then that's how I learnt it." [$S_2$05]

In contrast, not one RG2 student mentioned either Ed101 or Ed102 as contributing to their method.

When completing the writing task, again, a large proportion of LSG2e and RG2 students believed that high school contributed to the method they used. As for the tests and the examination, LSG2e students were more likely than RG2 students to mention Ed102 as contributing to their method. In contrast to when studying for the tests or the examination, students from both groups were more likely to mention that "trial and error" contributed to the method they used.

b) students' motivational orientations?

Pre-post effect sizes calculated from students' responses to the Motivation section of the MSLQ are presented in Figure 5.2 with details in Appendix 5.3. Students' responses related specifically to their perceptions of their motivational orientations in Ed101 at the end of Semester 1 (pretest) and in Ed102 at the end of Semester 2 (posttest).

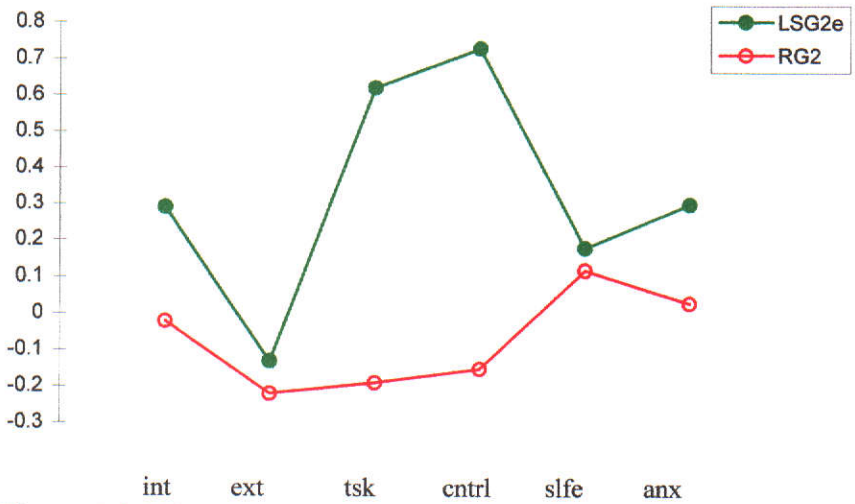


Figure 5.2 MSLQ "Pre -Post" effect sizes for Motivational Orientations of LSG2e and RG2 students.

Note. LSG2e $n = 17$; RG2 $n = 46$. int = intrinsic goal orientation, ext = extrinsic goal orientation, tsk = task value, cntrl = control of learning beliefs, slfe = self-efficacy for learning and performance, and anx = test anxiety. Positive values indicate higher post than pre values except for test anxiety where a positive value indicates a lower post than pre value (as the treatment reduced the learning pathology, namely test anxiety, it was considered to have had a positive effect).

Effect sizes for all motivational orientations were more positive for LSG2e students than for RG2 students. Exceptionally large differences in terms of LSG2e students'

reported task value perceptions and control of learning beliefs and very large differences in terms of their intrinsic goal orientations and reduction in test anxiety, were shown.

Overall, therefore, it appears that participating in the LSG2e was associated with increases in students' intrinsic goal orientations ($g = 0.29$), in terms of participating in tasks for personal reasons such as challenge, curiosity or mastery; task value ($g = 0.62$), in terms of interest, importance and utility; control of learning beliefs ($g = 0.73$), in terms of believing that efforts to learn are contingent on own effort in contrast to external factors such as the instructor; and a decrease in their test anxiety ($g = 0.30$). LSG2e students' reported self-efficacy for learning and performance was also close to being educationally significant ($g = 18$).

Participating in the RG2 was not associated with any educationally significant increases in students' motivational orientations, but was associated with a decrease in students' extrinsic goal orientations ($g = -0.22$). Further, RG2 students' reported task value was also very close to being negatively educationally significant ($g = -0.19$).

c) students' affect, specifically students' anxiety, confidence, worry and discomfort?

Anxiety

Student anxiety (other than test anxiety) was measured using the STAI and the AACL and results are presented below.

Pre-post effect sizes calculated from students' responses to the STAI completed at the end of Semester 1, 1995 and the end of Semester 2, 1995 are presented in Figure 5.3 (see Appendix 5.4 for details).

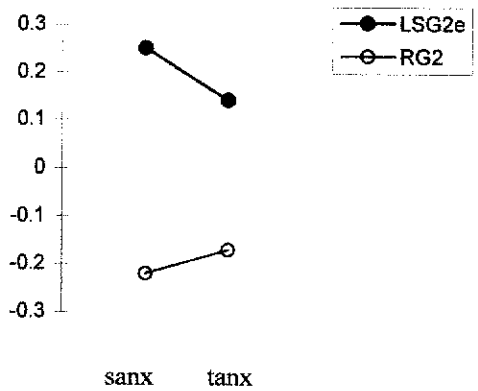


Figure 5.3 STAI "Pre - Post" effect sizes for State and Trait Anxiety of LSG2e and RG2 students.

Note. LSG2e n = 15; RG2 n = 42. sanx = state anxiety and tanx = trait anxiety. Positive values indicate a lower post than pre value (as the treatment reduced the learning pathology, namely anxiety, it was considered to have had a positive effect).

LSG2e students reported a small positive effect size (g = 0.25) for state anxiety. In contrast, RG2 students reported a small negative effect size (g = -0.22). Therefore, it appears that participating in the LSG2e was associated with a small decrease in students' state anxiety, while participating in the RG2 was associated with a small increase in students' state anxiety.

Data from the AACL were used to calculate an effect size for LSG2e students. The effect size was found to be g = 0.41 (M_{pre} = 10.13, M_{post} = 9.47, within groups SD = 1.59). Note, for anxiety a positive effect size indicates a lower post than pre value. This effect size supported the STAI findings of a decrease in LSG2e students' anxiety at the end of Semester 2, 1995. It was not possible to calculate an effect size for RG2 students because they completed the AACL once only at the end of the semester.

Confidence, worry and discomfort perceptions

At the end of Semester 2, 1995, all students completed the Perceptions survey. As in Semester 1, students were specifically asked to indicate the degree to which they felt confident and worried about their performance in Ed102, and also to rate how much discomfort they felt when attending the lecture and tutorial, when working on an assignment, when reading the textbook and when studying at home for Ed102.

LSG2e and RG2 students reported similar levels of confidence and worry. However, LSG2e students reported lower mean levels of discomfort when attending the lecture and tutorials, when working on their writing assignment, and when reading the text (see Appendix 5.5 for details). Statistically significant differences were found for students' perceived levels of discomfort in the tutorials, with LSG2e students reporting significantly less discomfort than RG2 students $F(3, 91) = 4.06, p = 0.0094$. The correlation ratio (eta squared) was 0.11, and as this is above 0.10 (often recommend as a minimum value for practical significance), it is suggested that the finding of a difference in the degree of discomfort experienced in the tutorials by students may have practical significance.

In qualitative terms, the explanations students[1] provided about the degree to which they felt confident and worried about their performance in Ed102 suggested that there were differences in the reasons students gave for their feelings, as illustrated by the comments below.

Students from both the LSG2e and RG2 mainly attributed high levels of confidence to the grades they had received in Ed102. Some also commented on the amount of effort they had expended:

> *"I am pleased that I have done well and tried my hardest."* [S_2R P107]

> *"I feel that my results have reflected the effort I have put in and that my marks have been pretty good."* [S_2R P114]

A number of LSG2e students, in contrast to RG2 students, attributed their high levels of confidence to their feelings of enjoyment and understanding of the content:

> *"I enjoy the work - summaries are good."* [S_2L_e P4]

> *"I do have knowledge on this topic and I have enjoyed it."* [S_2L_e P7]

[1] Note that when student comments are provided, S_2 refers to a questionnaire administered in Semester 2, L_e to students from the LSG2e, and R to students from the RG2, P to the Perceptions of being a first year student questionnaire, and the number to the questionnaire identification number.

For LSG2e students, low levels of confidence were mainly attributed to not knowing how they performed on the examination they had just completed. For students in the RG2, however, low levels of confidence were mainly attributed to not achieving as well as they would have liked to, not expending effort, not doing the required work, or being unsure of their past performance because completed work had not been returned to them:

> *"Could have done better if I wanted. Ended up losing interest."* [S_2R P91]
>
> *"Hopefully I would have passed, as I completed all the assessments even though they were not to the best of my ability."* [S_2R P113]
>
> *"I did some work and have learnt quite a bit but not as much as I should have."* [S_2R P144]
>
> *"Not knowing many previous marks before exam."* [S_2R P84]

A few RG2 students also mentioned subject difficulty, receiving low grades for past work and lack of preparation for the examination:

> *"I am not confident with Ed102 as it appears to be a lot harder than last semesters (sic) unit and I am not getting as good results."* [S_2R P31]
>
> *"...Just worried about this test thought I could've been better prepared."* [S_2R P93]

Both LSG2e and RG2 students attributed high levels of worry mainly to the examination they had just completed and its impact on their overall achievement. Some RG2 students mentioned a lack of time to study and/or not studying effectively:

> *"Because of all the other work that has been due in the last fortnight I don't feel that I have really put enough study time into the ED102 unit."* [S_2R P115]
>
> *"I haven't had a chance to study for this exam."* [S_2R P141]
>
> *"Didn't study very effectively. Didn't complete all the chapter readings. Left all study to the last minute."* [S_2R P37]
>
> *"I was not prepared enough for the exam."* [S_2R P144]

RG2 students were more likely than LSG2e students to make comments about the difficulty of the content and lack of support:

"The content - that there is so much to know and understand." [S_2R P151]

"The questions can sometimes be too complicated to understand and there are a lot of theories and theorists to remember. I wasn't given any indication of test material and as a result felt I couldn't focus my study and felt aimless (I've attended every workshop and lecture!)." [S_2R P133]

They were also more likely to mention that the content was irrelevant, their past performance poor, assessment items not satisfactorily marked, and classroom atmosphere uncomfortable.

Students from both groups specifically mentioned that the type of assessment contributed to their degree of worry:

"This exam! Multiple choice always confuses me - I would much prefer essay questions." [S_2L_e P135]

For all students, low levels of worry were mostly attributed to expending effort and obtaining satisfactory grades.

b) students' academic performance?

In terms of students' academic performance in Ed102, a statistically significant difference between the LSG2e and the RG2 students' overall scores (derived form student achievement on the course's assessment tasks described in Chapter 3) was found (F (3, 95) = 3.29, p = .024), with LSG2e students achieving higher overall scores. However, the correlation ratio (eta squared) of 0.094 was just below the minimum value of 0.10 for practical significance.

Interpretation of findings

In terms of students' learning strategy use, the findings suggest that when learning support was provided and when the use of effective strategies were valued in the classroom, students reported less of a decline in their use of strategies. For example,

the finding that RG2 students (but not LSG2e students) reported a decrease in the use of strategies to manage their time and study environment may have been due to a lack of learning support to use such strategies. For the RG2 students this finding is of concern, because the use of time management strategies specifically has been shown to be one of the most important aspects of being a successful student and one of the hallmarks of academic self-regulation (Corno, 1994; Kaldeway & Korthagen, 1995; Zimmerman, 1994). Further, Zimmerman and his colleagues state,

> There is now clear evidence that students' awareness of and strategic efforts to manage their study time does make a difference in their academic achievement. Time management strategies are not only academically helpful; they enhance students' personal perceptions of self-efficacy and intrinsic interest. Both of these constructs have been found to be highly associated with students' academic motivations.
>
> (Zimmerman, Greenberg & Weinstein ,1994, pp. 195-196)

In addition, the finding from the interview data that when completing the writing task, LSG2e students were more likely than RG2 students to report using monitoring and adapting strategies, as well as strategies to manage their time and study environments, may be associated with the specific focus of the learning support program given that, in the second semester, only LSG2e students were given writing support as part of the regular subject teaching. As outlined in Chapter 3, this support involved scaffolding students by putting class-time aside to discuss the essay's requirements, making the marking allocation clear, modelling how to complete the task, providing time in class for students to ask questions about the essay, and giving students the opportunity to submit a draft copy of their essay. The possible link between the reported use of monitoring and adapting strategies by LSG2e students and submitting a draft essay as part of writing support is further supported by the following student comments[2]:

> *"I looked at the feedback sheet...so I changed those for starters and then any of the other suggestions that you had suggested, I would then go through my notes again, have a read and see how I could include some more information to accommodate for the other suggestions, like I didn't put in with that last essay the teacher applications, which I had forgotten about the first time."* [$S_2$02]

[2] Throughout this chapter when students' comments are provided, S_2 refers to an interview conducted in Semester 2, the numbers 1 to 7 and 9 refer to students from the LSG2e and the numbers 8, 13 to 15 and 17 to 20 refer to students from the RG2.

"There were all those little points like 3.2.1, so I just went along and just had a look at where all those points were and then I looked up on your little guide what they meant and so I looked up what I had forgotten, then I went back to the books because I still had the same books out and re-read the sections and I worked out what I had missed and how I could include it without extending what I say too much and just went along and fixed up each section." [$S_2$04]

"...and also over that time as well I found a lot more, a lot better books, like new books because a lot of the books up in the Robertson were quite old, so I improved my resources you could say I suppose....then when I got my theory essay back I sort of focussed on the more important points and cut out a lot of the irrelevant middle half you know...I focussed on the more important parts and added books from the new resources...I think I re-wrote my introduction, and conclusion and some of the parts of mine were very brief so I expanded on them." [$S_2$05]

Further, the following comment suggests that submitting the draft essay may have also assisted students with the management of their time and, therefore, contributed to the possible difference between LSG2e and RG2 students' use of strategies to manage their time and study environments:

"Things like you making us do our essays before the actual assignment although at the time you know you try and get it all done, your thinking oh I hate doing this thing and you're getting all upset with yourself, it works out being in your favour in the end because when it came to the week before the assignment, when everyone started their big assignments, we had one big thing that we didn't have to do, all we had to do was to write up our results, we had none of the essay to do, nothing and [two students] in the other classes were just having absolute heart attacks because they knew they had this huge big essay to do and we'd already done it, we had done it ages ago, you know." [$S_2$02]

Also, some RG2 students indicated that they believed that submitting a draft of their essay would have encouraged them to use monitoring and adapting strategies and would have assisted them with managing their time, as illustrated by the following comment:

"You would spend most of the time actually writing it and revising it, that is what you would be doing if you didn't have to spend all that time understanding and getting books and you knew what you were doing and you knew what was expected of you and you knew how much you had to write... you would do a bit more reading and just spend more time getting the assignment just right..... It would also help us get more prepared because even though we have a big assignment they generally give us quite a bit of time to do it and we always have other things to do and we have tests and things and we still even though we have given all that time it generally doesn't tend to matter because it all boils down to the fact that you have only given yourself a week left to do it in even though you have had say, six." [$S_2$18]

The finding that both LSG2e and RG2 students reported an increase in the use of peer learning strategies may have been due to the focus in Ed102 on working collaboratively. Specifically, two of the assessment items required students to work with their peers in groups (the assessment items were a group class presentation and the construction of a test). This finding suggests that the type of task students engage in has a powerful influence on their learning behaviour.

The finding that more students mentioned trial and error as contributing to the method they used when completing the writing task, may be linked to the nature of the task as well as to students' prior knowledge and experience. Specifically, the short answer tests and examination were both types of assessment tasks that students would have completed at high school and would therefore have had prior knowledge and experience in. However, the writing task was new and therefore may have required students to adapt previously used strategies. The finding, from the interview data, that students' strategy use varied depending on the assessment task, again highlights the influence of the task demands on students' strategy use.

The finding that more LSG2e students than RG2 students acknowledged the strategies used in the learning support program as contributing to the method they used when studying, suggests that students were able to recognise the support when it was provided and that they believed it had a positive influence on the methods they used.

In terms of students' motivational orientations, the finding that LSG2e students reported higher motivational orientations, especially intrinsic goal orientations, task value perceptions and control of learning beliefs, may be associated with the approach adopted by the instructor when implementing the learning support program. As described in Chapter 3, the instructor, rather than adopting a directive approach, focused more on learning for understanding and encouraged students to take greater responsibility for their own learning. Further, the instructor adopted a context-based approach and placed great importance on creating a pleasant learning environment, in particular, by using group work strategies to foster student cooperative learning.

Research suggests that context-based approaches focussing on the task or the classroom context may impact positively on students' motivational orientations. For example, Covington and Beery found, as did the present study, that university classrooms that were organised in more cooperative ways increased students' motivation and decreased their anxiety (cited by McKeachie, et al., 1986). Alternatively, students' motivational orientations may have been influenced by the content and / or the fact that they had the instructor in Semester 1 and were, therefore, familiar with her instructional style, marking standards and expectations.

The reported differences in students' motivational orientations, specifically their extrinsic, intrinsic and task value perceptions, may suggests that LSG2e students adopted deeper approaches to their learning than RG2 students. There is evidence that a deep approach is related to engaging in tasks for intrinsic reasons and a surface approach to engaging in tasks for extrinsic reason and that students who adopt a deep approach report higher interest in the task than those who adopt a surface approach (Gow & Kember, 1990; Westman & Lewandowski, 1991).

The finding that, in the absence of learning support and in the presence of traditional teaching, the motivational orientations of RG2 students had decreased by the end of Semester 2 is not surprising and is supported by the work of Gow and Kember (1990). These researchers found that, based on a study of 1043 first and final year students from a range of departments, students' motivation, use of deep strategies and enthusiasm and competitive drive, declined from the first to the final year. A number of other studies have reported similar findings (see for example, Biggs, 1987; Watkins & Hattie, 1985).

In terms of student affect, the finding that LSG2e students reported more positive feelings associated with the learning method they used, fewer feelings of anxiety and significantly less discomfort in the tutorials, may also be associated with the provision of learning support and the approach adopted by the instructor when implementing the learning support program. In terms of confidence and worry, the role that assessment tasks play in contributing to students' levels of confidence and worry was

again emphasised by the findings. Specifically, it appears that students use their past performance on assessment tasks to gauge their feelings of confidence and worry. Also, the amount of effort students expend, their beliefs about the quality of their learning, and the learning context appear to contribute to their feelings of confidence and worry.

In terms of academic performance, the finding that LSG2e students achieved higher grades (despite the practical significance being low and the fact that the researcher had no control over the subjective nature of the marking) was encouraging and is supported by the work of Fuller, Chalmers and Kirkpatrick (1995) and Volet (1991).

In terms of the Conceptual Model underpinning the study, the findings presented above suggest that altering the *Instructional Methods* domain to include the expanded learning support program, impacted on *Student Cognition*, *Motivation*, *Affect* and *Academic Performance* domains in a number of ways. Firstly, as in Phase 2, providing support appeared to reduce the decline of students' use of cognitive learning strategies and, in contrast to Phase 2, had significant effects on promoting students' motivational orientations, affective reactions and academic performance. However, as mentioned earlier the subjective nature of the marking and the lack of control of the marking made it difficult to explore this finding fully. Secondly, the findings suggest that, as reported in Phase 2, the *Task Characteristics* domain is especially critical in supporting student learning in that the type of task students engage in has a powerful influence on their learning behaviour. For example, the finding that students' strategy use varied depending on the assessment task, emphasised the influence of the task characteristics on students' strategy use. Thirdly, as in Phase 2, the findings emphasised the important role that students' prior learning experiences play in influencing their beliefs, feelings and use of learning strategies. Finally, as in Phase 2, the findings suggest that the learning context appeared to have a significant effect on students' learning strategy use, their motivational orientations and affective reactions.

Research Question 4: What are the students' and instructor's perceptions and feelings as they engage in a learning support program?

The answers to Research Question 4 are presented in the sections that follow. The first section provides details about LSG2e students' views of participating in the expanded learning support program and the second section provides a summary of the instructor's views as she implemented the expanded learning support program.

Students' perceptions and feelings

As in Phase 2, both qualitative and quantitative data were used to obtain feedback on students' perceptions and feelings. Outcomes of the data collected on students' perceptions of the learning support class, their perceptions of the learning support strategies, and their affective reactions while participating in the expanded program are presented in the sections that follow.

Students' perceptions of the learning support class

Students' perceptions of the Ed102 class were gathered in the interviews conducted at the end of Semester 2, 1995. The question relating specifically to their perceptions of Ed102 was:

> "Was anything included in Ed102 (other than content) that made it different from your other units?"

As in Phase 2, students' responses were coded and grouped under two categories namely, "instructional style" and "instructional strategies". The findings are presented in Tables 5.3 and 5.4 below.

Table 5.3
Number and percentage of students LSG2e students (n = 8) identifying 6 aspects of the instructional style which made Ed102 different from other courses, with descriptions

		Instructional Style	
No	**%**	**Aspect**	**Description**
8	100	"support"	Instructor provides students with support. Support may be in the form of being available and/or approachable, creating a positive classroom climate, helping with assessments etc. An affective element is characteristic of this category.
8	100	"develop"	Instructor acted to develop the students in some way. Examples were the instructor building students' self-esteem, confidence or teaching learning strategies.
3	38	"direct"	Instructor acted as a director of student learning. Instructor directed, monitored and regulated students' learning.
2	25	"instructor global"	Instructor is mentioned as being different to other instructors, with no specific style being mentioned.
1	13	"guide"	Instructor acted as a facilitator of student learning, offering suggestions and guidance.
0	0	"challenge"	Instructor provided students with a cognitive challenge. Challenge was in the level of content presented or in skill development.

Table 5.4
Number and percentage of LSG2e students (n = 8) identifying 9 aspects of the instructional strategies which made Ed102 different from other courses, with descriptions

		Instructional strategies	
No	**%**	**Aspect**	
4	50	"group work"	Instructor provided opportunities for students to work in small groups.
4	50	"interactive"	Instructor used instructional strategies that ensured that students interacted with the material and each other. Active learning is encouraged.
3	38	"reflecting"	Instructor uses strategies so that students can reflect on what they have learnt, in order that they can monitor their learning.
2	25	"feedback"	Instructor gives feedback to the students.
2	25	"assessment"	Students saw the type of assessment in Ed102 as being different from the assessment in their other courses.
2	25	"rewarding"	Instructor provided rewards and this made Ed102 different(positive) to their other courses.
2	25	"materials"	Instructor provided appropriate instructional materials eg worksheets, handouts, questions
2	25	"clarifying"	Instructor went over the topic or task to make sure the students understood. Instructor made sure that they knew what to do etc.
1	13	"organising"	Instructor used instructional strategies that helped students organise their learning eg providing outlines, timetables, goal setting etc.

In terms of "instructional style", all students identified the instructor supporting and developing them as making Ed102 different from other courses. In terms of "instructional strategies", half the students identified group work and active learning

as making Ed102 different from other courses. Feedback from the analysis of the *Student Appraisal of Teaching* (SAT) questionnaire (the University's official student feedback instrument consisting of six items using a 5 point scale, with 1 = lowest rating and 5 = highest rating), supported the interview findings with students rating the instructor very highly in terms of responsiveness and communication. Overall SAT scores for organisation (4.9), feedback (4.9), knowledge of subject (5.0), communication (4.9) responsiveness (4.9) and instructor compared with others (4.9), indicated that the students were positive about the teaching experienced in the learning support class.

The views of the LSG2e students were compared to those of the RG2 students who were also asked whether they thought anything was included in Ed102 (other than content) that made it different from other courses. In terms of "instructional style", LSG2e students were more likely than RG2 students to mention the instructor supporting and developing them, and in terms of "instructional strategies", they were more likely to mention the use of group work and strategies that facilitated interaction and reflection, as well as the instructor providing feedback.

LSG2e students mentioned specifically the positive role of the instructor in helping them learn. In contrast, RG2 students mentioned specifically that the instructor did not adopt a supportive "instructional style". Further, RG2 students were more likely to make evaluative comments about the "instructional style" and "instructional strategies" they experienced, as illustrated by the following student comments:

> *"The workload was very different, there wasn't so much, there wasn't a lot of application it was all hypothetical, theoretical...there was no encouragement to keep up with the course work, there wasn't any need, you just go in every week and someone would give you a handout and ta da there is a week's worth of work done for you in an hour and a half. There was no reason for you to go away and do the reading for the class."* [$S_2$08]

> *"... all we did was just listen to the group presentations, we didn't really do much else... I didn't feel like that the teacher was available type of thing..."* [$S_2$20]

> *"...but generally I found the tutorials were really boring and I didn't learn anything from the tutorials..."* [$S_2$18]

Students' perceptions of the learning support strategies

Students' views about the specific learning strategies that were included in the expanded learning support program in Semester 2, 1995 were gathered using the SATL survey and by asking the students in the interviews to rate the strategies included in the program. The 10 most highly rated learning support strategies on the SATL are presented in Table 5.5.

Table 5.5
Top 10 learning support strategies included in the learning support program as rated by LSG2e students (n = 22) on the SATL expressed as percentages

Learning support strategy	Percentage	
	SA*	SD**
Submitting a first draft helped me improve my essay writing	91	0
I found being given a "summary outline" to complete was a good way to help me make a summary	82	0
I think that making the summary helped me understand the Ed102 content better	82	0
Having tutorial activities that relied on me doing the summary helped me learn	77	0
Completing the calendar at the beginning of the semester helped me plan my work	77	5
Completing the "tasks to be completed list" after the semester break helped me organise my work	73	5
The numbered feedback sheet was a good way to give me feedback	73	0
Working in small groups in the tutorials was a good way for me to learn	73	0
Rewarding me for completing a summary was a good idea	68	5
Making a list of the "tasks to be completed" during the second part of the semester was useful	64	5

Note. *SA = Strongly Agree representing 1 and 2 and **SD = Strongly Disagree representing 6 and 7 combined on a 7 point Likert scale. Negatively worded items have been reversed and stated positively.

Students rated submitting a first draft, completing the "summary outline", making a summary, participating in tutorial activities that related to their summary, and completing the calendars in class as the most valuable strategies to assist them learn. Interview data generally supported the SATL findings with students rating all of the abovementioned strategies highly (see Appendix 5.6).

In relation to the summary strategy specifically, in the interviews, students reported that making a summary helped them manage their learning, and commented on the value of the instructor checking on whether they completed them. Many, however,

mentioned that because completing a summary was not a course requirement, it may not always have been given priority. These comments were supported by SATL findings which suggested that, while students rated the summary strategy highly, only 15% reported making a summary for all classes (the remaining 85% reported making a summary for some classes).

Students' affective reactions while participating in the expanded learning support program

As outlined in Chapter 3, indications of LSG2e students' affective reactions were obtained by administering the AACL on five occasions and the Perceptions survey twice in Semester 2, 1995. Outcomes of the analysis of the data are presented below.

The affect adjectives on the AACL most often circled by students are presented in Table 5.6.

Table 5.6.
Most circled affect adjectives by LSG2e students (n = 20) on the AACL on 5 occasions during Semester 2, 1995 expressed as percentages

Affect adjectives and percentage									
week 1		week 5		week 9		week 12		week 15	
interested	60	challenged	55	challenged	50	challenged	55	worried	40
calm	55	weary	35	interested	40	satisfied	25	challenged	35
contented	40	interested	35	satisfied	40	overloaded	25	satisfied	30
challenged	40	overloaded	30	thoughtful	30	contented	25	contented	30
pleased	30	worried	25	organised	30	thoughtful	20	cautious	25
happy	30	curious	25	nervous	25	interested	20	happy	20
thoughtful	25	ambitious	25	comfortable	25	inspired	20	comfortable	20
organised	25	nervous	20	calm	25	calm	20	interested	20
curious	25			serious	20			pleased	20
comfortable	25			cautious	20			pleasant	20
ambitious	25			contented	20				
				aware	20				
				absorbed	20				
				secure	20				

While students circled a range of adjectives, the adjectives consistently circled the most were *interested, challenged,* and *contented.* The percentage of students circling the adjectives *interested* and *challenged* decreased over the semester, while the percentage of students circling the adjective *contented* remained constant.

Many more adjectives with negative connotations were circled after students completed an assessment item, that is, at times 2 and 3, where they completed short answer tests, and at time 5, where they completed the final multiple choice examination.

In terms of confidence, worry and discomfort, as measured by the Perceptions survey, students reported greater feelings of confidence than feelings of worry (see Appendix 5.7). Also, students' appraisals of their level of confidence and worry appeared to be affected by their perceptions of the specific learning situation.

In terms of discomfort, students reported experiencing the most discomfort when completing a writing assignment, when studying and when reading the text. Students' discomfort scores when reading the text appeared to decrease slightly over the semester, while discomfort scores when studying remained constant (see Appendix 5.7).

Interpretation of findings

In terms of "instructional style", LSG2e students emphasised the instructor providing support which took into account their feelings and the instructor developing them in terms of building their self-esteem, confidence or their use of learning strategies. In terms of "instructional strategies", LSG2e students mentioned the instructor using group work and strategies that encouraged active learning. This finding supports the overall thrust of the learning support program which included a major focus on encouraging students to take greater responsibility for their learning strategy use. The "instructional style" encouraged them to be informed and active participants in their own learning, acknowledged the role of feelings, and provided a supportive and less directive learning climate. Also, the fact that students were more likely to make positive comments about the role of the instructor in helping them to learn, supports the finding that these students valued the provision of learning support.

In terms of students' perceptions of the learning support strategies included in the program and their affective reactions while participating in the program, as in Phase 2, the findings suggest that students valued strategies that encouraged them to be active and assisted them to complete the work set (especially the assessment tasks). The issue identified in Phase 2 that is, of helping students turn "knowing into doing", was reinforced by the low percentage of students reporting making a summary every week despite acknowledging that it helped them to learn.

In terms of students' affective reactions, as in Phase 2, the findings suggest that students' affective reactions were affected by their appraisals of the specific learning situation, with assessment items having a marked negative impact on their reactions. Again, as in Phase 2, students' greater reported levels of confidence than worry may suggest that they were able to meet the learning demands required of them by the course.

In terms of the Conceptual Model, again as in Phase 2, the findings emphasise the role that the *Task Characteristics*, *Instructional Methods* and *Student Affect* domains and the learning context have on student learning. Also, the role that active engagement plays in learning and the view that students are active processors of information and are, thus, in control of their own learning behaviours, was again supported by the findings.

Instructor's perceptions and feelings

In Phase 4, the Reflective Diary provided information about the instructor's perceptions and feelings as she implemented the expanded learning support program. In contrast to Semester 1, teaching in a way that focussed not only on the content being taught, but also on assisting students to learn the content, appeared to be mostly uplifting and rewarding and only occasionally more difficult and more psychologically demanding than teaching content only. As in Semester 1, 1995, the instructor's reactions were associated with clearly identifiable factors associated with the

instructor, the students and the institution, and varied across time. Comments, in the form of quotes from the diary, are again included to illustrate these factors.

Instructor factors

The instructor was very committed to her teaching and focused on teaching in ways that encouraged student learning. Consequently, the importance she attached to teaching and learning contributed to her positive and negative reactions when implementing the learning support program.

Positive reactions were mainly associated with the students applying their knowledge, learning actively and for understanding, and the classroom climate:

> *"When students were asked what did they learn today it was great to see how many felt that they could now relate and pick out parts of the classroom that applied the principles in the text. I was pleased about that..." [15/09/95, week 8]*

> *"Students worked in groups. They were on task and applying their knowledge. It was excellent. They used the theory...One group was corrected by other students in the class because they had applied the theory incorrectly, well done!!."* [20/10/95, week 13]

> *"I asked students to get into groups and discuss their summaries. It was really wonderful having a group of students who had some knowledge and understanding of the subject, we could at least discuss the issues and how they could be applied, and related to real life classrooms."* [11/08/95, week 3]

> *"My class really went well. They were so busy and really seemed involved in the activity. The climate was really good." [20/10/95, week 13]*

In addition, when the instructor's attempts at making classroom activities meaningful and relevant were successful, her reactions were positive:

> *"[before the class] I have spent ages trying to make sure that my activity links in with what I set for homework... [after the class] I really enjoyed the class, they used the theory, applied it to an activity and then hypothesised about uses in the classroom. I was really happy that they could see the value of the theory."* [13/10/95, week 12]

"I spent a lot of time pondering this [the need for students to have some background knowledge] and decided to start off by asking students to form pairs and come up with the theory / main points on which rules and procedures are based. I had an overhead clearly outlining what they had to do. I also included a summary checklist and asked them in pairs to discuss their summaries. I was pleased with the response." [20/10/95, week 13]

Negative reactions, of which there were only three, were associated with the instructor hearing that her high expectations were not met with appreciation by all students, the time needed to include a focus on teaching learning strategies, and the difficulty associated with knowing how to teach in a way that encouraged students to use appropriate learning strategies:

"Some students have said that they feel less pressurised now that they are not in my class, with its great demands, challenges and high standards. I feel so depressed." [18/08/95, week 4]

"The activity took much longer than I thought and ended up taking the rest of the session, there went the video!!" [11/08/95, week 3]

"I like the idea that students should read and summarise etc a little at a time and that they should connect ideas and reorganise information to fit their way of thinking, but how do you get students to do it?? I am trying to do all the things I know helps understanding and know that just telling students (providing declarative knowledge) is just not enough. My attempts are to get them to do it (ie procedural knowledge and conditional), but wow it is hard to teach!!!!" [06/10/95, week 11]

Student factors

The impact that student factors had on the instructor's reactions when implementing the learning support program again emerged strongly. However, while student factors were mainly associated with negative instructor reactions in Semester 1, 1995, they were associated with both negative and positive instructor reactions in Semester 2, 1995. Negative reactions were associated with students' lack of involvement and participation, lack of preparation and poor attendance, negative responses to learning strategy instruction (in relation to the time and effort needed when using the strategies), lack of motivation, focus on assessment and content, and resistance to change (see Chapter 5 for examples of typical comments illustrating these factors). Positive reactions were associated with students' positive responses to learning

strategy instruction, active involvement and participation, high levels of preparation, and high levels of motivation.

Many comments indicated that positive student responses to the implementation of many of the learning strategies contributed to the instructor's positive reactions:

> *"It really was great that before I had a chance to hand out the calendar...[a student] asked me for a semester calendar and had even brought the one I had given her in E101 one along to remind me of what she wanted. I had made up one for this semester so was able to give her one...I went around the class offering everyone a calendar and they all seemed pleased to get one, WOW!!"* [28/07/95, week 1]

> *"I was also very pleased about the class's response to the addendum [which included details about the summary strategy]. They appeared happy and thought it was a good idea...I was very surprised when I asked students to talk to each other and come up with some rules / tips for writing the summary. It appears that they had never considered the rules and so I was pleased to see that they were eager and keen to be informed about how to write a summary...I asked the class to vote about setting a goal each week and to submitting a draft copy of their essay. They have all said yes to the draft idea and only four students [out of a total of 24] have said no to the goals. A very pleasing result!!"* [28/07/95, week 1]

> *"I was told by my class today that they were really grateful that they had done a draft essay so early in the piece, they tell me that lots of other students are really stressing as they are doing their first draft now, the day before the assignment is due in!! Most of mine are all refining and honing their essays, well done students!!"* [20/10/95, week 13]

Positive instructor responses were also associated with the students being actively involved and willing to participate in class:

> *"They all came up with the relevant theoretical info, with students putting up their hands and volunteering info. This is so great to see. Normally you have to prompt and prod...I am so impressed as all of the major points were raised."* [20/10/95, week 13]

Further, positive instructor responses were recorded when students completed the work set and were consequently able to use their knowledge in class:

> *"I was so impressed with the number of students who completed the summary using the proforma...some students said that initially they thought it would be easy ...but due to the limited space they had to synthesise the paragraphs into a succinct sentence or two, I was so pleased I wanted to scream with joy."* [13/10/95, week 12]

"The more I think about it the more amazed I am that so many students handed in a draft essay so early in the semester. I am really pleased...Because they had done their theoretical essays already they seemed to know so much about test administration good and bad tests, testing environment etc. I was really pleased to see them using their knowledge in a useful way." [06/10/95, week 11]

High levels of student motivation were also met with positive responses from the instructor:

"I was very pleased to see the dedication displayed by the students who seem determined to make a real effort to understand the topic." [11/08/95, week 3]

However, analysis of the diary suggested that, despite all the support provided and many students taking advantage of the support offered, there were always some students who did not complete the work set and come to class prepared. This non-compliance concerned the instructor and created a dilemma with regard to how to react to these students in a fair and appropriate way, and also caused her to question the reasons for their non-compliance:

"Despite all this there were still a few who did not do the work. I do not know what to do with students who do not do the work. Is it enough to rely on their own feelings of dissatisfaction or should there be a consequence...This is really a dilemma, you so want to treat them like adults but they are still rather like children...I am a little confused that at this stage as students still do not come to class prepared. How do you get students to be prepared as well as maintain a warm classroom climate?? Should you just say 'oh well I will focus on those that have done the work'?. I am trying to do this. It is really hard though!! Maybe the faculty is also at fault, students have about six assignments due in 5 days. Maybe we need a big pin-up board in the staffroom that shows when and what is due. Despite careful planning on the part of the students it is a very daunting thing to manage time, especially for novices. It is easy to forget that at the first year level the hardest thing for students is time planning, and our context really mitigates any assistance offered. How can I expect students to come with a summary when a major assessment piece is due??" [20/10/95, week 13]

Institutional factors

The overall course demands and associated workload affected students who appeared to be overloaded trying to meet all the demands placed on them:

"I am beginning to feel signs of stress and work overload on the part of the students. Their positive and good intentions are starting to wane, as the work piles up and the assessments take over." [18/08/95, week 4]

"Lots of students are sick at the moment...They seem so tired and overloaded, hardly the happy, carefree students we all remember or think we remember. It is a hard time of the semester with all the work piling up etc." [06/10/95, week 11]

The perceived negative impact of the course demands and the associated workload on students resulted in the instructor questioning whether it was appropriate to include a focus on learning:

"I truly feel that asking students to complete the summary for understanding etc is only alienating them and putting pressure on them. They see it as another thing to do amongst all their assessment items. They place it low on the list of priorities. How can we go for understanding and deep learning when they are battling to stay above water with their perceived work-load?" [18/08/95, week 4]

Moreover, the reduced class contact time in Semester 2 also impacted negatively on the implementation of the learning support program and the instructor's intentions of modelling good practice and encouraging student learning:

"This unit is driving me mad, it is now week 7 and I have seen the students 3 times for a tutorial and twice when administering the hour long short answer tests completed in the lecture sessions. Overall, of the 15 weeks we have 8 tutorial sessions and 2 weeks go to teaching prac and 1 to the week free. There are no classes for the remaining 4 weeks to reduce costs. How can this economic rationalism be allowed to do this, it really disrupts the whole process and means that students get a little bite at everything. We are almost presenting a surface unit, so why should we expect deep from the students?" [12/09/95, week 7]

Diary entries indicated that students often experienced difficulty with being able to freely approach their lecturers, especially when they needed assistance or clarification:

"Students are really bringing up the issue of approachability lately. They seem to be finding some staff very unapproachable. I had two students in my office who said they were going to try and go to [another university] as they were not having their needs met..." [06/10/95, week 11]

"One of my students...had found herself in a hole having failed a major assignment and was very frightened to approach the lecturer. Again this view of approachability or perceived approachability keeps coming up." [13/10/95, week 12]

Further, lecturers were often not available. This lack of approachability and availability resulted in students coming to the instructor for assistance and clarification. As a result, the instructor questioned whether she should be involving herself with other lecturers' students and whether she was able to provide the appropriate assistance:

> *"Two of my ex students came in and said they could not find their lecturer so would I check a worksheet for them. I did, but should I??"* [15/09/95, week 8]

> *"I have quite a few students who are not 'mine' coming and seeking advice, it really is difficult as the lecturers are so territorial and also have such strong theoretical opinions that I am always scared of saying the wrong thing."* [13/10/95, week 12]

The overall inflexibility of the course structure (as perceived by the students) and the lack of support offered to students from country areas by the institution, impacted on students' morale and on retaining students in the learning support class:

> *"Two students came into my office and asked for assistance re their draft essays. They also said they were very disillusioned by the course structure and the inflexibility of the Faculty. They had hoped to spend more time away working (to keep alive they tell me), and thus wanted some external units of which there are none."* [18/08/95, week 4]

> *"I fear that one very good students is battling to stay in the course. She is so homesick and would like nothing more than to go home to Geraldton [a country town]. I think I will give her a call and see how she is. Country students have a rough deal."* [18/08/95, week 4]

Reactions over time

The instructor's perceptions were mostly positive over the semester (see Table 5.7). The association between the instructor's affective reactions and the factors outlined above namely, "instructor factors", "student factors" and "institutional factors" are included together with the instructor's overall affective reactions on 8 occasions during the semester[3] (Note: The theme to which the factor refers is included in brackets, that is, (T) = Instructor, (S) = Student and (I) = Institutional).

[3] Diary entries were made in 8 of the 15 weeks of the semester. Diary entries were not made in weeks 2, 5, 9, 15 because there were no workshops scheduled, in weeks 6 and 7 because students were out on teaching practice, and in week 10 because it was the week free from class contact. Data were missing for week 14.

Table 5.7

Instructor affective reactions and a summary of factors associated with the reaction on 8 occasions during Semester 2, 1995

	week 1	week 3	week 4
Affective reaction	Positive	Mixed	Negative
Factors associated with reaction	Positive responses to teaching (T) Positive responses to learning strategy instruction (S) Positive involvement and participation (S) Positive high level of motivation (S)	Positive responses to teaching (T) Positive high level of preparation (S) Positive high level of motivation (S) Negative time needed (T) Negative response to learning strategy instruction (S) Negative resistance to change (S) Negative focus on assessment (S)	Negative previous student reactions (T) Negative lack of preparation (S) Negative lack of involvement and participation (S) Negative focus on assessment (S) Negative lack of student support (I) Negative course structure (I)

	week 8	week 11	week 12
Affective reaction	Mixed	Mixed	Positive
Factors associated with reaction	Positive responses to teaching (T) Negative lack of preparation (S) Negative staff responses (S)	Positive responses to teaching (T) Negative how to teach to encourage learning (T) Positive high level of participation (S) Positive responses to learning strategy instruction (S) Negative initial lack of involvement and participation (S) Negative resistance to change (S) Negative lack of attendance (S) Negative workload (I) Negative staff responses (I)	Positive responses to teaching (T) Positive response to learning strategy instruction (S) Positive involvement and participation (S) Positive high level of motivation (S)

	week 13	week 14
Affective reaction	Mixed	Positive
Factors associated with reaction	Positive responses to teaching (T) Positive responses to learning strategy instruction (S) Positive involvement and participation (S) Negative course structure (I) Negative lack of preparation (S)	Positive responses to teaching (T)

Interpretation of findings

In summary, as in Phase 2, it appears that the instructor's affective reactions were affected by her idiosyncratic perceptions of the specific learning situation at any one time. However, in Semester 2, 1995, in contrast to Semester 1, 1995, it appears that positive reactions were associated with both "instructor" and "student" factors, while negative reactions were mainly associated with "student" and "institutional" factors.

This finding that the instructor's reactions were more positive when implementing the expanded learning support program and that they were associated with both "instructor" and "student" factors may have been due to the approach adopted by the instructor. As mentioned previously, the instructor adopted a less directive approach and focussed more on learning for understanding, encouraging students to take greater responsibility for their own learning. Positive reactions may also have been due to the type of learning strategies included and to the fact that students were possibly more committed to the support because they had some control over the strategies that were included. As described in Chapter 3, students were given the opportunity to decide whether they wanted some of the strategies, notably the goal-setting, draft essay and summary strategy, to be included in the expanded program.

In terms of the Conceptual Model, again the influence that students' reactions to the instructional strategies used has on the instructor's affective reactions and on the instructor's selection and use of instructional methods, was highlighted.

Research Question 5: From the students' perspective, which aspects of the instructional context, specifically instructional style and instructional strategies, facilitate their learning

In order to answer Research Question 5, students' views about the instructor's role in supporting their learning were gathered in the interviews conducted at the end of Semester 2, 1995. The questions relating to the instructor's role in supporting learning were:

"What should your lecturer do to assist you learn?"

"What do you want them to do to specifically help you?"

"What sort of teaching strategies help you learn the subject?"

Again, as in Phase 2, students' responses were coded and grouped under the two categories "instructional style" and "instructional strategies". The number and percentage of students mentioning the different aspects under each category are presented below.

Instructional style

Students' responses to the questions "What should your lecturer do to assist you learn?" and "What would you want them to do to specifically help you?" are summarised in Table 5.8.

Table 5.8
Number and percentage of students (n = 20) identifying 7 aspects of the instructional style which assist them to learn, with descriptions

		Instructional Style	
No	**%**	**Aspect**	**Description**
18	90	"support"	Instructor provides students with support. Support maybe in the form of being available and/or approachable, creating a positive classroom climate, helping with assessments etc. An affective element is characteristic of this category.
15	75	"direct"	Instructor acts as a director of student learning. Instructor directs, monitors and regulates students' learning.
12	60	"reflect"	Students believe that for instructors to assist them instructors should reflect on their teaching, seek and act on student feedback, keep up to date etc. A critical element is characteristic of this category.
7	35	"guide"	Instructor acts as a facilitator of student learning, offering suggestions and guidance.
6	30	"develop"	Instructor acts to develop the students in some way. Examples are the instructor building students' self-esteem, confidence or teaching learning strategies.
4	20	"challenge"	Instructor provides students with a cognitive challenge. Challenge may be in level of content presented or in skill development.
4	20	"none"	Students believe that it is not up to the instructor to assist them. They believe that the responsibility for learning lies with them.

Note. "Instructional style" refers to the approach to teaching which students believe the instructor *should* adopt.

The majority of students identified support as being important to their learning. Students also mentioned the instructor directing, guiding, developing and challenging them. In Semester 2, 1 995, a new category labelled "reflect", emerged from the data, with two thirds of the students making comments under this category. The "reflect" category involved students commenting that, for instructors to assist them to learn instructors should:

seek and act on student feedback

> *"Students should be able to, I mean the lecturers are here judging us and giving us grades and saying okay you pass or you fail, well the student should have the same powers, they should be able to say, you're not doing your job properly, do something about it please, there should be some facility for the students to say something like that."* [$S_2$08]

keep up to date

> *"Just knowing what they're talking about for starters and I think being more, like having more fresh ideas, like being involved with schools as well as while they're teaching you perhaps not just being with you for a long period of time and teaching the same old things."* [$S_2$04]

teach well

> *"They are trying to teach us what is in the syllabus, so they should be able to do that well enough so that we can learn. I mean if they're just standing up and regurgitating a text book they're not teaching us anything and if they are putting notes in closed reserves [they should] make sure they get in there."* [$S_2$08]

be courteous to students

> *"Like if they haven't answered the question that I asked and answered something else...You know most lecturers should turn around and say well, have I answered your question?..."* [$S_2$10]

> *"...there were no apologies on the door it was just we would turn up there and we would wait and we wait and we wait and we wait...and then the fortnight after when we come back she says oh I'm sorry, I forgot my diary, I was away..."* [$S_2$15]

and have a positive attitude to their teaching

> *"If their attitude is a bit more enthusiastic and cheerful it might help instead of coming in like rather not being on time and unwilling to be there, so it helps if like, if they enjoy being there and then we enjoy being there."* [$S_2$15]

Instructional strategies

Students' responses to the question "What sort of teaching strategies help you learn the subject?" are summarised in Table 5.9.

Table 5.9
Number and percentage of students (n = 20) identifying 14 aspects of the instructional strategies which assist them to learn, with descriptions

		Instructional strategies	
No	**%**	**Aspect**	**Description**
17	85	"interactive"	Instructor uses instructional strategies that ensure that students interact with the material and each other. Active learning is encouraged.
15	75	"group work"	Instructor provides opportunities for students to work in small groups.
11	55	"variety"	Instructor uses a variety of instructional strategies eg discussion, video, guest instructors etc
10	50	"clarifying"	Instructor goes over the topic or task to make sure the students understand. Instructor makes sure that they know what to do etc.
9	45	"feedback"	Instructor gives feedback to the students.
7	35	"organising"	Instructor uses instructional strategies that help students organise their learning eg providing outlines, timetables, goal setting etc.
7	35	"model and practice"	Instructor first demonstrates and then provides an opportunity for the students to practise.
5	25	"reflecting"	Instructor uses strategies so that students can reflect on what they have learnt, in order that they can monitor their learning.
4	20	"materials"	Instructor provides appropriate instructional materials eg worksheets, handouts, questions etc
4	20	"reinforcing"	Instructor reinforces the content taught by presenting it in a variety of ways.
2	10	"explaining"	Instructor explains the topic by talking or lecturing.
1	5	"note taking"	Instructor dictates notes. Students take notes while instructor is talking.
1	5	"questioning"	Instructor asks the students questions.
1	5	"being a role model"	Instructor is a role model to the students. Instructor practices what he/she preaches.

Note. "Instructional strategies" refers to the instructional strategies which students perceive the instructor *should* use.

Students gave overwhelming support to strategies that were interactive and therefore, promoted active learning. Of the students mentioning the use of interactive strategies, a third specifically mentioned wanting to complete work in class, as illustrated by the following comments:

> *"There should be more of the students doing work in the class..., I mean it is easy just to sit in the class and do nothing for 6 months and there is not a problem there, but if the student is actually doing work in the class, well then you know that they are learning, I mean that is a bit like High School but it is an effective way of teaching as well."* [$S_2$08]

"Well, actually doing what you are learning, like for methods of teaching you get in groups and practice the actual methods and that was good, because it sort of made it concrete in your mind." [$S_2$19]

In addition, three quarters mentioned group work, half mentioned using a variety of instructional strategies and clarifying, and just under half mentioned providing feedback as ways of assisting them to learn. As with "instructional style", a new category namely, "reflecting", emerged from the data, with a quarter of students making statements under this category. The reflecting category was characterised by the use of instructional strategies that help students reflect on their learning, for example:

"Like [asking]... 'What have I learnt today' and just going back over it" [$S_2$20]

"Going over past work, like from the week before or whatever, ...like going through certain things about that particular unit, that was the main thing that really helped me pick up things." [$S_2$03]

Interpretation of findings

As in Phase 2, most of the students were able to articulate their views of the role of the instructor in supporting their learning. Again the majority of students mentioned that the instructor adopting a supportive style and using strategies that promoted active learning assisted them to learn. In contrast to Phase 2, fewer students mentioned the instructor organising their learning. This suggested that students were using their past experiences and their familiarity with the learning context and its demands to organise their own learning.

In contrast to Phase 2, students were more likely to be critical of the teaching experienced and were more likely to mention that they believed that instructors should reflect on their own teaching in order to improve it. This finding suggests that, as students in the present study were Teacher Educations students, they were gaining theoretical knowledge on what constitutes good teaching. Students were using their understanding to critically evaluate the instructional styles and instructional strategies they experienced.

In terms of the Conceptual Model, again the importance of the learning context, students' prior experiences and beliefs, the role of affect in learning, and the view that students are active processors of information, were highlighted by these findings.

Research Question 6: What is the most appropriate length and timing for a program designed to enhance first year students' learning?

In order to answer Research Question 6, the outcomes of providing learning support in Phases 2 and 4 of the study (see Figure 5.4), were considered. Specifically, quantitative data from the MSLQ and qualitative data from interviews were used.

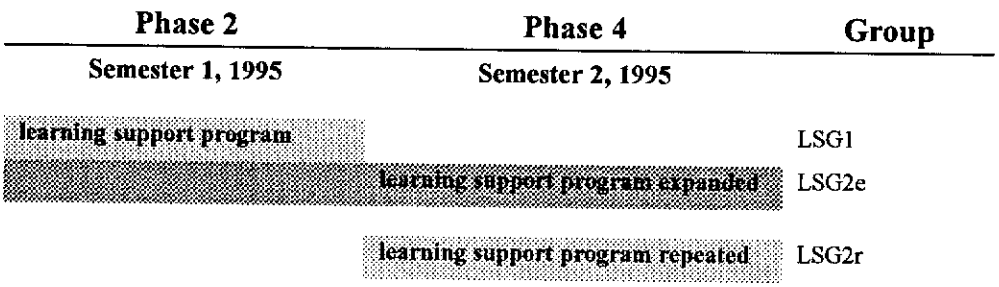


Figure 5.4 Learning support programs in Phases 2 and 4 of the study

As illustrated in Figure 5.4, the learning support program implemented with two classes in Phase 2 was expanded and implemented with one class in Phase 4. In addition, the program implemented in Phase 2 was repeated in Phase 4 with a new class of students.

The outcomes which relate firstly, to the most appropriate length and secondly, to the most appropriate timing of a program designed to enhance first year students' learning, are presented in the following sections.

Length

In order to shed light on the most appropriate length of a program designed to enhance first year students' learning skills, outcomes from participating in the expanded learning support program (LSG2e) and the outcomes from participating in the repeated learning support program (LSG2r) were considered. Differences in students' learning strategy use, motivational orientations and affect by the end of Semester 2, 1995, in comparison with the end of Semester 1, 1995, are presented in Figures 5.5, 5.6 and 5.7, with details in Appendices 5.1, 5.3 and 5.4.

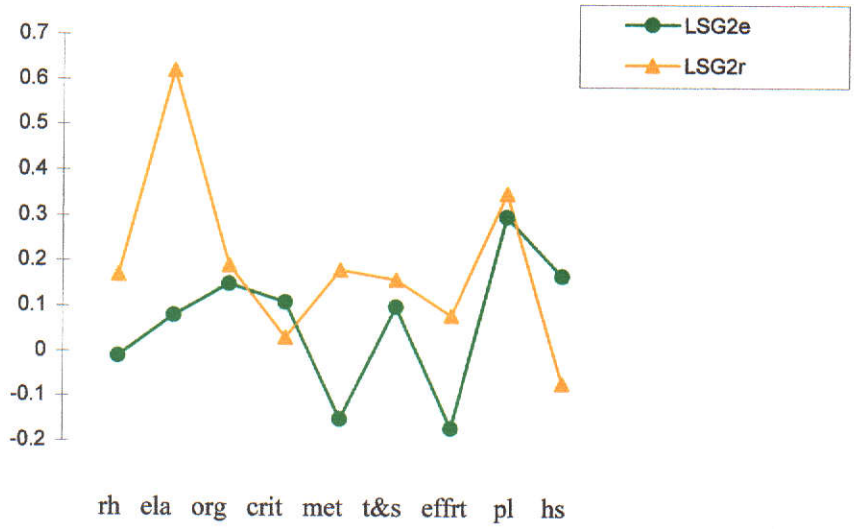


Figure 5.5 MSLQ "Pre - Post" effect sizes for learning strategy use by LSG2e and LSG2r students.

For students' learning strategy use, other than for critical thinking and help seeking, participating in the repeated program (LSG2r) was associated with more positive effect sizes than were associated with participating in the expanded program (LSG2e). Analysis of student responses to the interview questions relating to the learning strategies used when learning for the tests and the examination supported the MSLQ data findings.

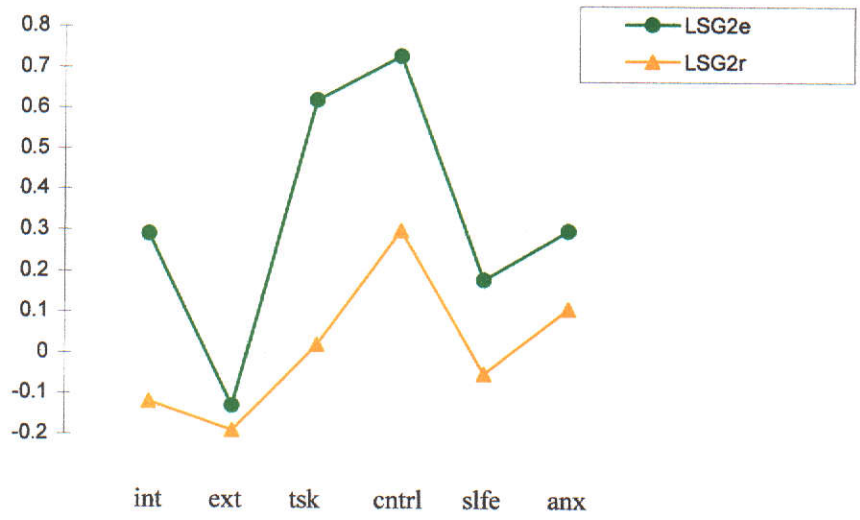


Figure 5.6 MSLQ "Pre -Post" effect sizes for Motivational Orientations of LSG2e and LSG2r students.

For students' motivational orientations, participating in the expanded program (LSG2e) was associated with more positive effect sizes than were associated with participating in the repeated program (LSG2r).

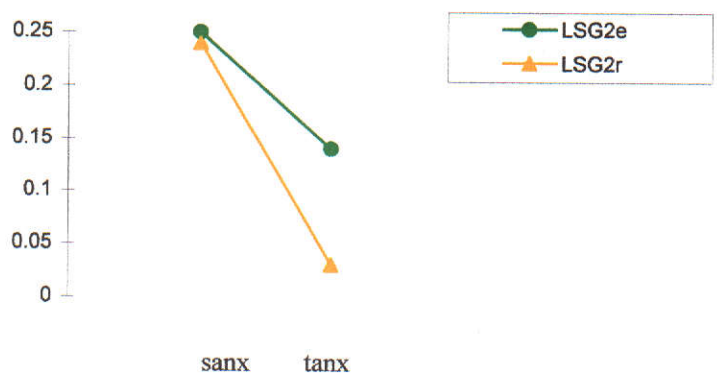


Figure 5.7 STAI "Pre - Post" effect sizes for State and Trait Anxiety of LSG2e and LSG2r students.

Students in both the expanded (LSG2e) and the repeated (LSG2r) program reported a decrease in state anxiety and reported similar feelings about the method they used when learning for the tests, examination and when completing the writing task. However, in relation to feelings of discomfort, students who participated in the expanded program (LSG2e) reported lower mean perceived levels of discomfort

scores when working on the writing assignment and when reading the text than students in the repeated program (LSG2r) (see Appendix 5.5).

In relation to students' perceptions of participating in the learning support programs, feedback about the "instructional strategies" used and the "instructional style" experienced by students in both programs was positive. In contrast Diary entries revealed that the instructor's experiences were more positive when implementing the expanded program.

Timing

With regards to timing, specifically, the outcomes of the learning support program implemented in Semester 1, 1995 (LSG1) and the outcomes of the repeated program implemented in Semester 2, 1995 (LSG2r) were considered. Effect sizes for students' learning strategy use, motivational orientations and affect are presented in Figures 5.8, 5.9 and 5.10.

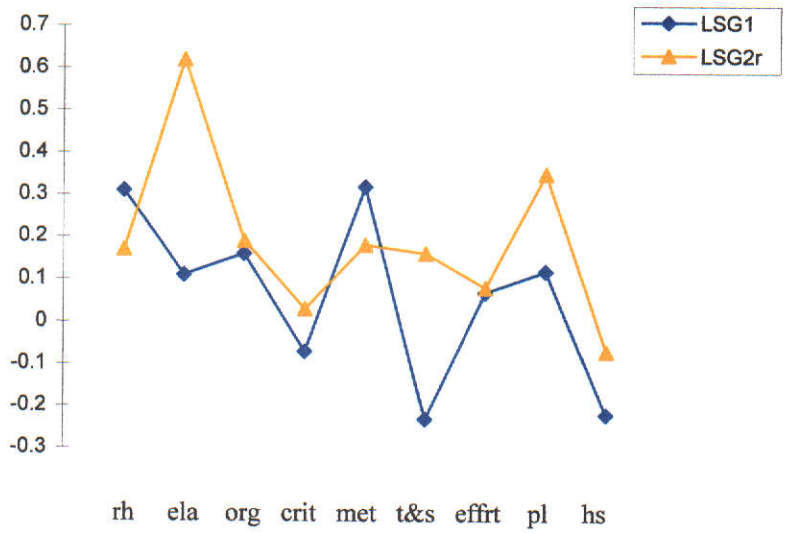


Figure 5.8 MSLQ "Pre - Post" effect sizes for learning strategy use by LSG1 and LSG2r students.

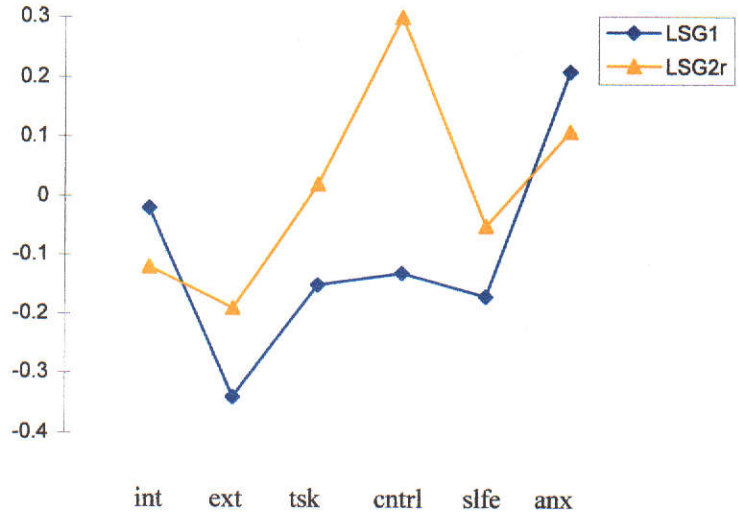


Figure 5.9 MSLQ "Pre -Post" effect sizes for Motivational Orientations of LSG1 and LSG2r students.

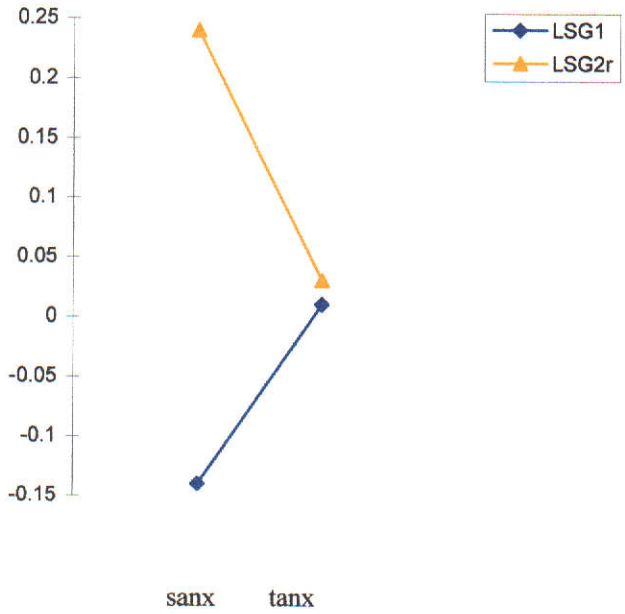


Figure 5.10 STAI "Pre - Post" effect sizes for State and Trait Anxiety of LSG1 and LSG2r students.

As shown above, participating in the repeated learning support program in Semester 2, 1995 (LSG2r) was generally associated with more positive effect sizes for students' learning strategy use, motivational orientations and affect than the effect sizes associated with participating in the learning support program in Semester 1, 1995 (LSG1).

Feedback about the strategies used in the learning support programs indicated that LSG1 and LSG2r students rated similar strategies highly (see Table 4.5 and Appendices 4.6 and 5.8). Both LSG1 and LSG2r students rated submitting a first draft, working in small groups, the feedback sheet, writing summaries, the handouts, completing the tasks list, and the calendar in the top 10 learning strategies included in the programs. In relation to the "instructional style" and "instructional strategies" used, feedback from both groups was again positive. Also Diary entries revealed that instructor experiences were similar when implementing the programs.

Overall, therefore, it appears that providing learning support for a semester in the second half of the year was associated with increases in students' learning strategy use, metacognitive skills and affective reactions but not in their motivational orientations. Providing support over two semesters appeared to be associated with a positive increase in students' affective reactions (including reduced feelings of discomfort) and had the greatest positive influence on students' motivational orientations. In addition, instructor experiences and perceptions were more positive when implementing the expanded program in the second semester than those reported when implementing the first semester program or repeating it in the second semester.

The factors which may have contributed to the finding that support provided in the repeated program appeared to be associated with more positive effect sizes in terms of first year students' use of learning strategies, may include the nature of the course in terms of its content and work demands; the group, which comprised students who remained in the course; the students, who after a semester of learning experiences, may have been less anxious and more settled, committed and open to learning support in Semester 2; and the instructor, who by Semester 2, may have honed and developed the strategies and how to teach them, and also developed a greater rapport with the students.

The finding that providing support over two semesters appeared to have the greatest influence on students' motivational orientations may have been due to the group of students, the continuity they experienced by having the same instructor for the whole

year, their previous learning success, the instructor's reactions, and /or the way in which the course was presented.

Based on these findings, it would appear that a one semester learning support program, implemented in either Semester 1 or Semester 2 of the year, is associated with increases in the use of learning strategies. Providing learning support over two semesters is associated with increases in motivational orientations, and affect without a decrease in learning strategies and metacognitive skills. It appears therefore, that providing learning support over two semesters is more beneficial for students in terms of their achievement of cognitive, metacognitive, motivational and affective outcomes.

Research Question 7: Is there a relationship between learning behaviour and academic performance?

Research Question 7 is addressed in this section. When addressing the question, the relationship between students' academic performance and each of the major domains of the Conceptual Model, namely, *Student Cognition*, *Metacognition*, *Motivation* and *Affect*, are specifically explored using both quantitative and qualitative data gathered in Phases 2 and 4 of the study.

Cognition and academic performance

Two sources of data, quantitative and qualitative, were used to shed light on any possible relationship between cognition and academic performance.

In relation to quantitative data, all students' final grades in Ed101 (n = 127) and Ed102 (n = 101) (derived from their performance on the course assessment tasks described in Chapter 3) were correlated with their end of semester MSLQ Cognitive subscale scores. For Ed101, significant positive correlations were found between all students' rehearsal (r = .20, p = .024), elaboration (r = .19, p = .029), time and study environment (r = .22, p = .015) and effort regulation (r = .20, p = .023) strategy scores, and their final grades in Ed101. For Ed102, significant positive correlations

were found between all students' elaboration ($r = .24, p = .016$), time and study environment ($r = .44, p = .000$) and effort regulation ($r = .37, p = .000$) scores, and their final grades in Ed102. While the significance levels were all below 0.5, the correlation coefficients for all strategies, except time and study environment, were all less than 0.4 indicating a very weak relationship (Burns, 1990) between academic performance and the use of learning strategies, other than time and study environment strategies.

In relation to the qualitative data, only the relationship between students' performance and their use of cognitive strategies on the final examination in Ed101 and Ed102 was investigated. This task was specifically selected because of its objective nature and because it was scored by an independent marker.

For Ed101, examination scores ranged from 33.3% to 90% with an average score of 67.7%. For Ed102, examination scores ranged from 58.3% to 85% with an average score of 72.27%. Achievement levels were categorised as high (grade above 80%), medium (grade between 60% and 80%), and low (grade below 60%). The number and percentage of students falling into each of the categories is shown in Table 5.10.

Table 5.10
Number and percentage of all interviewed students achieving high, medium and low scores on the examination

	Number and percentage in category		
Final examination Task	high	medium	low
Ed101	4(19)*	11(52)	6(29)
Ed102	1(5)	18(90)	1(5)

Note. Ed101 n = 21, Ed102 n = 20. * figure in brackets denotes percentage of the total in the group.

For Ed101, students who reported using organisation, time and study environment and effort regulation strategies were more likely to achieve a high score in the final examination than students who did not report using these strategies (see Table 5.11). For Ed102, students who reported using time and study environment strategies were more likely to achieve a high score on the final examination (see Table 5.11).

Table 5.11
Number and percentage of students using cognitive learning strategies and their achievement on the Ed101 and Ed102 examination

	Number and percentage in category					
	Ed101			Ed102		
Cognitive strategy	high *n*=4	med *n*=11	low *n*=6	high *n* = 1	med *n*=18	low *n*=1
rehearsal	4 (100)*	10 (91)	6 (100)	1 (100)	18 (100)	1 (100)
elaboration	1 (25)	4 (36)	2 (33)	1 (100)	9 (50)	1 (100)
organisation	2 (50)	4 (36)	2 (33)	0	10 (56)	1 (100)
time & study environ	2 (50)	4 (36)	0	1 (100)	3 (17)	0
effort regulation	2 (50)	0	0	0	4 (22)	0
peer learning	0	4 (36)	1 (17)	0	6 (33)	0
help seeking	0	1 (10)	0	0	0	0

Note. * figure in brackets denotes percentage of the total in the group.

Analysis of both quantitative and qualitative data suggests that there may be a positive relationship between students' use of selected cognitive strategies, specifically elaboration, time and study environment and effort regulation strategies to academic performance. These findings are supported by other research which links the use of cognitive strategies to effective learning and academic achievement (Dickinson & O'Connell, 1990; Pintrich, et al., 1993; van Overwalle, 1989; Zimmerman, et al., 1994; Zimmerman & Pons, 1986). The finding that the use of strategies to manage time and study environments and a willingness to expend effort was strongly associated with achievement is supported by the research of Zimmerman, Greenberg and Weinstein (1994) reported earlier, by Volet and Lawrence (1990) who suggest that mature students who lacked many study skills but were motivated, were more likely to do well in a first year statistics course than students who had just completed their last year at high school, and by Pintrich, Smith, Garcia and McKeachie (1993) who found that students who successfully managed their own time and study environment, as well as their own effort were more likely to perform better in their courses. Research also suggests that the use of good study habits at university is associated with higher academic achievement (Britton & Tesser, 1991; Matt, Pechersky, & Cervantes, 1991; Westman & Lewandowski, 1991).

Metacognition and academic performance

Both quantitative and qualitative data were also used to explore any possible relationship between metacognition and academic performance.

In relation to the quantitative data, again all students' final grades in Ed101 (n = 127) and Ed102 (n = 101) were correlated with their end of semester MSLQ Metacognitive self-regulation scores. The statistical analysis revealed that for both Ed101 (r = .17, p = .059) and Ed102 (r = .17, p = .099) there was a positive, although not statistically significant, correlation between students' Metacognitive self-regulation scores and their final grades.

In relation to the qualitative data, again, only the relationship between students' performance on the final examination and their use of metacognitive control strategies was investigated. Based on the interview data students were grouped into one of the following six categories based on their reported use of Metacognitive Self-regulation strategies:

- planning, monitoring and adapting
- planning and monitoring
- monitoring and adapting
- planning only
- monitoring only
- no planning, monitoring or adapting.

Students' performance on the Ed101 and Ed102 final examination was linked with the interview data relating to their Metacognitive self-regulation strategy use and the findings are presented below.

For Ed101, interview data showed that students who obtained high grades on the final examination were more likely than students who did less well on the examination to report using metacognitive self-regulation strategies, namely planning, monitoring and adapting (see Table 5.12).

Table 5.12
Number of students (n = 21) using metacognitive self-regulation strategies and their achievement in the Ed101 examination

	Achievement in Ed101 exam		
Metacognitive self-regulation when studying for the exam	high above 80%	medium 60% - 80%	low below 60%
plan / monitor / adapt	3		
plan / monitor		5	1
monitor / adapt	1		
plan only			2
monitor only		3	
no plan / monitor / adapt		3	3

Students who reported using planning, monitoring and adapting strategies, or monitoring and adapting strategies only, all obtained a high grade (82%, 82%, 85% and 87%). Students who did not report using Metacognitive self-regulation strategies, specifically adapting strategies achieved less well. In addition, students whose Metacognitive self-regulation scores on the MSLQ where higher at the end of the semester, than at the beginning of the semester were more likely to obtain a higher overall grade for Ed101 (see Appendix 5.9).

For Ed102, interview data showed that students' use of Metacognitive self-regulation strategies did not appear to be strongly related to their performance on the examination (see Table 5.13). Also, changes in students' metacognitive self-regulation scores on the MSLQ did not appear to be related to their academic achievement (see Appendix 5.9).

Table 5.13
Number of students (n = 20) using metacognitive self-regulation strategies and their achievement in the Ed102 examination

	Achievement in Ed102 exam		
Metacognitive self-regulation when studying for the exam	high above 80%	medium 60% - 80%	low below 60%
plan / monitor / adapt	1	5	
plan / monitor		3	
monitor / adapt		3	
plan only		3	
monitor only		4	
no plan / monitor / adapt			1

Analysis of both quantitative and qualitative data suggests that when students begin studying at university there may be a positive relationship between their use of metacognitive self-regulation strategies and academic performance. These findings are supported by other research which links metacognition to effective learning and academic achievement (Alderman, et al., 1993; de la Harpe, Radloff, & Parker, 1997; Murray-Harvey, 1996; Nist, et al., 1991; Pintrich & De Groot, 1990; Pintrich, et al., 1993; Schraw & Dennison, 1994). The findings are also in line with research that suggests that possessing a repertoire of learning strategies and being metacognitive about learning enables students to be effective learners (Baird & White, 1984; Dart & Clarke, 1991; Kirkpatrick, et al., 1993; Pintrich, et al., 1992; Pintrich & Johnson, 1990; Ramsden, et al., 1986; Volet, 1991; Weinstein, 1988; Zimmerman & Pons, 1986).

While research which supports the relationship between metacognitive self-regulation and achievement has been presented above, the finding that students' use of metacognitive self-regulation strategies was not clearly related to their achievement scores in Ed102 is supported by other research such as the work of Zimmerman and Pons (1986), who found that the use of self-evaluation strategies was not significantly related to 10th grade students' academic achievement. They state however, that despite self-evaluation not relating to student achievement they "...continue to believe that this is an important self-regulated learning strategy." (p. 626). In addition,

McKeachie, Pintrich, Lin and Smith (1987) report that the outcomes of research on metacognition, learning and instruction by German and Dutch researchers have been mixed. Further, Friedrich and Mandl (cited by McKeachie, et al., 1987) point out that training in metacognitive self-regulation has been "less successful than might have been expected in view of the correlations between metacognition and learning performance" (p. 1). McKeachie, Pintrich, Lin and Smith (1987) suggest that these findings may be attributed to the "interactions between learning strategies, prior learning and the specific learning task" (p. 1). At the one end of the continuum, it is suggested that training in learning strategies and metacognition may not be helpful if learners are "so lacking in necessary content knowledge as to be completely confused" (p. 2). At the other end, if learners already have effective strategies, training may be of little value because asking them to think about their strategies "metacognitively may simply divert capacity from the learning task itself" (McKeachie, et al., 1987, p. 2). Radloff (1997) found that high levels of self-regulated learning (of which metacognition is a part) were not needed for adult learners to achieve well academically or to report positive personal outcomes about their learning at university.

The factors which may have contributed to the lack of a clear relationship between students' use of Metacognitive Self-regulation strategies and academic performance in this study may have included any or all of the following:

- the examination task itself may not have been difficult enough to evoke the use of metacognitive self-regulation strategies;
- students' previous success without the use of metacognitive self-regulation strategies;
- time constraints preventing the use of metacognitive self-regulation strategies;
- students' familiarity with the context; and
- students' strategy use had become automatic and thus was not reported by them in the interview.

Findings from other studies (Brown, 1980; de la Harpe & Radloff, 1998; Garner, 1990; Garner & Alexander, 1989; Zimmerman, 1990) suggest that students will only employ the metacognitive strategies of planning, monitoring and adapting if they are faced with a novel situation or a negative experience, for example failing or doing badly. It appears, therefore, that if the task is familiar or if learners are being successful (that is passing), they study without employing metacognitive strategies or reflecting on what they are doing. The catalyst for employing metacognitive self-regulation strategies may be a challenging task that requires the use of new strategies, a mismatch between learning behaviour and learning outcomes, or negative feedback, such as, a failing grade. Thus, instructors who do not provide students with cognitive challenges and also frequently provide students with false or misleading feedback, despite their good intentions, are not doing students a favour. Instructors need to develop ways to create challenging learning environments and to provide honest feedback so that students are not lulled into a false sense of security about their progress. This view is supported by Parsons and Meyer (1990), who found that only students who initially failed a test and accepted an invitation to attend remedial sessions aimed at assisting them to improve their learning, attempted to change their study behaviours. Overall, therefore, metacognitive self-regulation may act as a director and controller of strategy use and may only be brought into play in situations that require active management of learning.

Motivation and academic performance

All students' final grades in Ed101 (n = 127) and Ed102 (n = 101) were correlated with their end of semester MSLQ Motivation subscale scores, namely intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety.

For Ed101, significant positive correlations were found between students' (n = 127) overall grades in Ed101 and their intrinsic goal orientation (r = .21, p = .020), task value (r = .31, p = .000) and self-efficacy for learning and performance (r = .40 p = .000) scores. For Ed102, significant positive correlations were found between

students' overall grades in Ed102 and their task value ($r = .27, p = .006$) and self-efficacy for learning and performance ($r = .42\ p = .000$) scores.

These findings suggests that students who engaged in the tasks for reasons such as challenge, curiosity or mastery (intrinsic goal orientation for Ed101 only), who perceived the course content as interesting, important and useful (task value), and who believed they were able to master the tasks set (self-efficacy for learning and performance), were more likely to achieve a higher grade in the courses. This interpretation is in line with the research which links student motivation to effective learning and achievement (Ames & Archer, 1988; Dweck, 1986; Entwistle, 1988; Garcia & Pintrich, 1993; Garcia & Pintrich, 1994; Harackiewicz & Sansone, 1991). For example, Pintrich, Smith, Garcia and McKeachie found that for a sample of 380 college students, the Motivational subscales (except for extrinsic motivation) showed significant correlations with final grades, suggesting that students who approached their work with an intrinsic goal for learning, who believed that the material was interesting and important, who had high self-efficacy beliefs for accomplishing tasks, and who rated themselves as in control of their learning were more likely to do well in terms of course grade. At the same time, students who reported being anxious about tests were less likely to do well in the course (Pintrich, et al., 1993).

Affect and academic performance

All students' final grades in Ed101 ($n = 113$) and Ed102 ($n = 103$) were correlated with their end of semester anxiety, confidence, worry and discomfort scores, as measured by the AACL and the Perceptions survey.

For Ed101, the statistical analysis revealed that there was a negative ($r = -.12, p = .209$), although not statistically significant, correlation between students' anxiety scores as measured by the AACL and their final grades at the end of the semester. Students' reported level of confidence was positively correlated with their achievement ($r = .42, p = .000$), and the degree of worry reported negatively correlated with their achievement ($r = -.28, p = .003$) in Ed101. Students' reported

levels of discomfort when attending the lecture (r = -.24, p = .013) and the tutorial (r = -.28, p = .003), when studying (r = -.22 p = .019) and when completing a writing assignment (r = -.20, p = .041), were all negatively correlated with their achievement in Ed101.

For Ed102, the statistical analysis revealed that there was a significant negative correlation between students' anxiety scores, as measured by the STAI (state r = -.34, p = .001; trait r = -.24, p = .025) and AACL (r = -.24, p = .017), and achievement. Also, students' reported level of confidence (r = .50, p = .000) was positively correlated and their degree of worry (r = -.28, p = .005) and discomfort when attending the tutorial (r = -.26, p = .009) was negatively correlated with their achievement.

The results suggest that for Ed101, students who reported higher levels of confidence and lower levels of worry about their academic performance and who also felt less discomfort when attending the lectures and tutorials, when studying and when completing writing assignments, were more likely to achieve a higher grade. For Ed102, the results suggest that students who reported higher levels of confidence and lower levels of anxiety and worry about their academic performance and who also felt less discomfort when attending the tutorials, were more likely to achieve a higher grade in Ed102. These findings suggest, therefore, a positive relationship between students' achievement and their positive feelings about learning tasks, the learning process, and the learning context.

Overall, therefore, in terms of the relationship between cognition, motivation, affect and academic performance, students who reported using elaboration, effort regulation and especially strategies to manage their time and study environments; who used metacognitive strategies when faced with new and challenging tasks; who perceived the course content as interesting, important and useful; who believed they were able to master the tasks set; who reported higher levels of confidence than worry; and who experienced less discomfort when attending tutorials, were more likely to achieve a higher grade in their Ed101 and Ed102 courses.

The present study's findings are discussed in a more general manner with regard to the literature on student learning and the Conceptual Model underpinning the present study, in the next chapter.

Chapter 6

Discussion and Implications

Summary of findings
Discussion of findings
The Conceptual Model
Refining the Model
Using the Model
Implications for teaching and learning
Developing student learning
Acknowledging prior learning
The role of the learning context
Task characteristics
Course characteristics
Instructional climate
Affective climate
Tensions between content and process
Instructor's and students' roles

In this chapter, the findings presented in Chapters 4 and 5 are discussed in a more general manner in terms of their relationship to the literature on providing learning support. Following this discussion and based on the present study's findings, how the Conceptual Model underpinning the study was refined is discussed and the modified model presented. A discussion of the Model's use in the present study is then presented. A discussion of the findings in terms of their implications for teaching and learning at university concludes the chapter. First, however, a summary of the study's major findings is presented.

Summary of findings

Overall, the findings of the present study suggest that students who participated in the learning support program in Semester 1 were more likely to report an increase in the use of a number of learning strategies, notably rehearsal and metacognitive self-regulation. Students in the regular group were more likely to report a decrease in the

use of the majority of learning strategies, especially organisation and effort regulation strategies. Students from both groups were likely to report a decrease in the use of strategies to manage their time and study environments and to seek help. In Semester 2, all students, regardless of group, were likely to report an increase in the use of peer learning strategies. Only students from the regular group reported a decrease in the use of strategies to manage their time and study environments.

Students' motivational orientations changed over the year, with the orientations for students who participated in the learning support program for both semesters being generally much more positive by the end of Semester 2 than at the end of Semester 1 or beginning of Semester 2.

In relation to affect, students who participated in the learning support groups reported a decrease in anxiety, while students who participated in the regular group reported an increase in anxiety by the end of Semester 2. Further, in comparison to students in the regular group, students in the learning support group in Semester 1, reported less discomfort when completing their writing assignment and when attending the lectures, and students in the learning support group in Semester 2 reported less discomfort when attending the tutorials.

The provision of learning support and the type of assessment tasks that students engaged in, as well as the learning context, appeared to have a major impact on the learning strategies they used and their feelings about them. On the whole, providing learning support appeared to raise students' awareness of, promote positive feelings towards, and encourage the use of, learning strategies. In terms of assessment items, the writing task, in particular, appeared to encourage students' learning strategy use, notably their use of resource management strategies. In contrast, the learning context, particularly the scheduling of assessment items and the overall course workload and demands, appeared to work against strategy use.

While students' prior learning experiences – particularly those at high school – influenced their learning strategy use, the grades they received at university, their

personal orientations to the course, and the nature of the course they were engaged in, all appeared to play a major role in determining their perceptions of the effectiveness of their strategy use, and their feelings of confidence and worry. While students' affective reactions were idiosyncratic and varied in response to the perceived learning context, assessment items and studying were consistently associated with negative affective reactions.

Feedback about the "instructional style" which students experienced in the learning support classes suggested that they found the instructor's style supportive. In terms of "instructional strategies", students reported that the inclusion of strategies to help them organise their learning in Semester 1, and to learn actively in Semester 2, made the Ed101 and Ed102 courses different from other courses. Student feedback about the strategies used in the learning support programs showed that they especially valued strategies that promoted active learning and encouraged them to complete the work set, in particular the assessment tasks. Students also indicated that working with their peers in groups helped them to learn. Further, students who participated in the learning support programs were more likely to mention specifically the positive role of the instructor in helping them learn.

Instructor perceptions of providing learning support, while also idiosyncratic and associated with perceptions of the specific learning situation, were more positive during implementation of the expanded learning support program in Semester 2. In Semester 1, student factors, notably the mismatch between students' behaviour and the instructor's expectations, students' inability to turn "knowing into doing", and institutional factors, notably students' and library staff's negative reactions to the additional demands placed on them, appeared to make implementing the program more difficult and more psychologically demanding than teaching content only. In Semester 2, students' apparent commitment to their learning and positive responses to the learning support made implementing the program uplifting and rewarding. Nevertheless, the non-compliance of some students, the overall course demands and workload, the reduced class contact time, students' reactions to the lack of approachability and availability of some instructors, the inflexibility of the course

structure and the limited support for country students, all impacted negatively on the instructor's reactions when implementing the learning support program.

In terms of the instructional context, that is, the influence of "instructional style" and "instructional strategies" on student perceptions of their learning, findings indicated that students believed that their learning was assisted by instructors who were supportive, specifically in terms of being approachable and available, and who used strategies that helped them organise their learning in Semester 1 and that promoted active learning in Semester 2. Further, at the end of Semester 2, students indicated that they believed that instructors should reflect on and obtain feedback from students about their teaching so that, if necessary, they could improve their teaching.

With regard to the length and timing of learning support programs, the findings suggest that providing highly structured learning support for one semester was associated with an increase in students' use of learning strategies and metacognitive skills and, when provided in Semester 2, also with a reduction in student anxiety. Providing support across two semesters was associated with a large increase in students' motivation and a change in their affect (including reduced feelings of anxiety and discomfort when reading the text and completing the writing assignment).

With regard to learning and achievement, the findings suggest that students who used selected cognitive and metacognitive strategies as required, perceived the course content as interesting, important and useful, believed that they were able to master the tasks set, reported lower levels of anxiety, higher levels of confidence and lower levels of worry about their academic performance, and who felt less discomfort when attending the tutorials, were more likely to achieve a high grade.

Discussion of findings

The findings from the present study suggest that when learning support is provided it is possible for first year university students to increase their use of learning strategies and to change their motivational orientations and affective reactions. These findings are in line with the outcomes of intervention studies conducted at university that have been contextualised, that are subject-specific and implemented by the subject instructor (Alderman, et al., 1993; Dart & Clarke, 1991; Fuller, et al., 1994; Volet, 1991).

The finding that students' use of learning strategies increased is particularly promising given that, as reported by McInnis, James and McNaught (1995), school leavers (who were the majority of students in the present study) are "...relatively less certain of their roles than older students, less diligent in their study habits, and less academically oriented" (p. xi) and that "it is very difficult to change the study skills that students have acquired, usually over many years of study" (Hattie, Biggs & Purdie 1996, p. 122), and that the older students are, the more resistant they are to attempts at getting them to change their use of learning strategies. In fact, Hattie, Biggs and Purdie (1996) report that the interventions aimed at enhancing student learning by improving their use of either one or a combination of learning or study skills, were the least effective for university students.

The use of metacognitive self-regulation strategies, as widely reported in the literature, was found to play a role in student learning. However, use of these strategies appeared to be related to learning situations in which students encountered obstacles or failure rather than as routinely used strategies. This finding lends support to the notion of automaticity (McKeachie, et al., 1986; Zimmerman, 1989a), where strategies are applied so automatically that no thinking is necessary. The findings suggested also that the use of metacognitive strategies was not necessarily always linked to positive academic learning outcomes, a finding supported by other studies (McKeachie, et al., 1986; Radloff, 1997; Zimmerman & Pons, 1986).

The finding that students' motivational orientations increased substantially by the end of the year is especially encouraging given that, as reported by the Australian Higher Education Council and Glassick (1997), first year students often experience difficulty in maintaining motivation to learn in the absence of the structures provided in high school. In the present study, changes in students' motivational orientations were related to specific contextual factors, in particular, assessment tasks and instructional strategies. Further, the important relationship between motivational factors, specifically, self-efficacy and task value for academic achievement, was highlighted. Thus, both "will" and "skill" (McCombs & Marzano, 1990; Paris & Winograd, 1990) are important for successful study. The findings, therefore, highlight the importance of acknowledging motivational factors in learning (Meece, 1991; Meece, 1994; Pintrich, et al., 1992; Pintrich & Schrauben, 1992).

Affect, as predicted in the expanded Conceptual Model, played a major role in both student and instructor reactions and behaviours. First year students as expected, do experience anxiety, not only in relation to tests, but also in relation to other aspects of first year study, such as attending lectures and tutorials, and when studying. While the literature tends to focus on test anxiety (Harackiewicz, Manderlink, & Sansone, 1992; Naveh-Benjamin, McKeachie, & Lin, 1987; Pintrich & De Groot, 1990; Tobias, 1985), the findings of the present study suggest that affect not only mediates students' academic performance, with more anxious students performing less well, but feelings pervade all aspects of learning. The findings suggest also that a certain level of affect is necessary for effective behaviour and that negative affect can be reduced when an appropriate climate is created. Anxiety, worry and discomfort can be reduced and confidence increased given the appropriate environment and support. However, changes in affect occur gradually and appear to require consistent and lengthy involvement in rewarding and supportive learning environments. Changes in affect were associated with certain instructional styles and strategies, notably support, in terms of the instructor being approachable and available, and providing opportunities for active learning and collaborative learning. This finding is in line with what the literature suggests about good teaching (Gibbs, 1992; Gibbs & Lucas, 1995; Ramsden, 1987; Ramsden, Margetson, Martin, & Clarke, 1995).

The learning strategies students used in the present study were associated with the nature of the subject and the type of tasks they were required to complete. Thus, students when studying in Ed101, the introductory level course in Educational Psychology in Semester 1 which focussed on familiarising students with the discipline content and assessed their content knowledge, were more likely to use rehearsal strategies. In contrast, students when studying in Ed102 in Semester 2, which focussed on applying educational theories and assessed students' presentations of the theories, were more likely to use peer learning strategies. These findings are in line with others which have shown that students will vary their use of learning strategies in response to the nature of the subject and the perceived demands of the learning tasks (Entwistle, 1995; Entwistle & Entwistle, 1991; Scouller, 1998; Tang, 1992).

The present study found that students valued instructional strategies which the literature has shown to be effective and which assisted them to complete the work set, including completing a draft, completing summary outlines and getting feedback. Further, students wanted opportunities to practise the strategies as opposed to being only told about their use. This finding highlights the importance of using a combination of strategies that are theoretically based and empirically validated. Moreover, as suggested by Meece (1994) and Westman (1991), instructors need to be flexible and to use instructional strategies which meet the needs of particular students at certain times in their learning, as was done in the present study, as illustrated by the changes to the program in Semester 2. In line with the view that instructors should have a multi-perspective focus on learning and teaching (Gentile, 1996), and with the present study's findings, an integrated theoretical approach is needed on which to base learning support programs. Thus, effective learning support programs require a mix of theoretical perspectives because programs which are paradigmatically bound may not meet the needs of the students or the goals of the instructor (Gentile, 1996; Lucas, 1990; McCombs, 1991).

The success of the learning support program in the present study may have been due to the design which included instructional strategies that were theoretically validated. The strength of the program may, therefore, have been due to the combination of

strategies from different theoretical perspectives based on student needs rather than strict adherence to a single theoretical perspective. However, no definitive conclusions can be drawn because the design of the study did not allow for the identification of specific strategies because strategies were provided as part of a whole program.

The present study found that the instructor had an especially important role to play in developing first year students' writing skills and strategies. This finding is supported by the Higher Education Council and Glassick (1997), who report that despite the introduction of general education courses in both the USA and Japan first year students are not adequately prepared in writing and require extensive remedial work.

In relation to providing in-context writing support specifically, the overwhelming reaction from students was that the inclusion of writing support, particularly being required or being given the opportunity to produce a draft of their first writing assignment, was very helpful. However, there are a number of reasons why this strategy may not be generally used. Students may resist doing drafts because they think that it takes too much time, especially when assignments are left to the last moment; that there is too much to be covered in the "overstuffed curriculum" to afford the luxury of drafting; that doing a draft will make no difference to the quality of their work; that the feedback will not be helpful or understood; that they do not need to conform to the instructor's format, ideas and focus; or that they do not know what a draft is and how it can help to improve their writing (Radloff, 1994; Radloff & Samson, 1994; Samson & Radloff, 1993).

Instructors may also be against using drafts because they think that university students should be able to write competently; that the marking will be too much work; that giving students help by responding to drafts is not fair and it is not their responsibility; that it is wasting their time that should be used for research; that students will not value the feedback or use it; and perhaps that they do not know what sort of feedback to provide (de la Harpe & Radloff, 1996; Radloff, 1994).

The findings of the present study suggest that these beliefs are incorrect. Using drafts together with appropriate feedback, provides an opportunity for review, discussion and interaction. It signals the importance of writing to students and reinforces the view that writing is developmental, and dispels the myth that good writing is a gift. Facilitating the writing of drafts improves students' writing and makes them feel better about themselves as writers and about their own writing. In short, it is time well spent, since simply giving advice about writing to students is ineffective (Garner, 1990; Gibbs, 1981; Mahalski, 1992). Most students need more than advice since, as mentioned previously, knowing is not easily translated into doing. As Marsella, Hilgers & McLaren (1992) point out, instructors need to break "students' long-rewarded habits of handing in unrevised final drafts" (p. 187) and, instead, provide opportunities for students to practise more appropriate writing behaviours.

Moreover, the finding that many students mentioned "cramming" the night before the test and exams and leaving completing the writing task to the last minute despite attending the project preparation sessions where good time management was discussed, further illustrates that students do not employ self-regulated strategies spontaneously. This finding is not surprising and is supported by Radloff (1997) and by Boulton-Lewis, Wilss and Mutch (1996) who conclude that even adult students are not self-regulated or self-directed learners.

The findings of the present study suggest that providing learning support over two semesters was more effective than a one semester program. Moreover, the fact that some students still appeared to need additional support, even after two semesters, to maintain the use of appropriate strategies or to change less appropriate ones, suggests that learning support is best provided across subjects. It could be argued that participating in a program in one subject, namely Educational Psychology, is not sufficient for most students to develop effective learning and metacognitive strategies. They may, therefore, benefit more from experiencing this kind of support in a variety of contexts and over a longer period, which includes enough time to prompt the use of learning strategies, to provide corrective feedback and for learners to realise that

old methods no longer work as well as new ones (Garner & Alexander, 1989; Weinstein, 1982).

Overall, the findings of the present study that most students appreciated the support given and the positive influence that this had on the classroom climate and student learning, was encouraging. The findings are in line with the literature (Alderman, et al., 1993; Dart & Clarke, 1991; Fuller, et al., 1995; Hadwin & Winne, 1996; Hattie, et al., 1996; Nist & Simpson, 1990; Volet, 1991) which suggests that a range of cognitive, metacognitive, motivational and affective strategies relevant to the discipline and students' needs should be taught in context and "just in time" by the discipline instructor. Furthermore, students need to see the value of the strategies being taught and should be given opportunities to become informed about the use of the strategies and to practise them (McKeachie, 1988; McKeachie, et al., 1985; Palincsar, 1986).

In summary, while most of the gains from the learning support program were small, the present study has demonstrated that it is possible to get a shift in first year students' learning strategy use (both cognitive and metacognitive), their motivational orientations, and their feelings about their learning. However, positive changes are more likely to occur when learning support is provided throughout the first year of study, is made a legitimate part of the curriculum, consists of theoretically based structured and appropriately timed support, promotes active student participation, focuses on providing support to students when completing tasks that are new and unfamiliar, encourages students to apply strategies to actual set learning tasks, and is presented in a supportive environment in the context of regular subject teaching by the discipline instructor.

The Conceptual Model

The Conceptual Model described in Chapter 2 which underpinned the present study, was based on McKeachie, Pintrich, Lin and Smith's (1986) General Model of College Teaching and Learning. The Model was adapted, based on the literature on student learning, for use in the present study and specifically chosen because it was believed that a student mediation model was able to represent more fully the relationship between teaching and learning in a specific learning context than simpler process-product models (Shulman, 1986).

As highlighted in the discussion of findings in Chapters 4 & 5, the findings supported the Conceptual Model in a number of ways. Firstly, the active role students take in their learning, in terms of being initiators, planners and observers of their own learning experiences as articulated by the Model, was supported. Specifically, encouraging active learning and engaging students in tasks, appeared to enhance student learning outcomes. Secondly, the complex relationships between student entry characteristics, instructional methods, task characteristics and learning outcomes, and the learning context, were highlighted. Thirdly, the interdependent relationship between cognitive, metacognitive, motivational and affective variables suggested by the Model, was supported. Specifically, it appeared that these variables influenced student learning and behaviour, supporting Pintrich (1991, p. 199), who suggests that "in the 1990s, motivational issues can no longer be ignored by researchers interested in cognition and learning in classrooms.". The present study's findings in relation to affect suggest that affective issues play a central role in learning and cannot be ignored either. Fourthly, the link between the use of selected cognitive and metacognitive strategies, students' motivational orientations and affective reactions, and academic performance, was supported. Fifthly, the Model allowed suggestions to be made about the possible impact that task characteristics and instructional methods have on students' learning strategy use, motivational orientations, affective reactions and academic performance.

Refining the Model

While the present study's findings supported the Model, they also suggested certain changes to the way the Model was conceptualised. The refined Model is presented in Figure 6.1 and the rationale for the changes is discussed below.

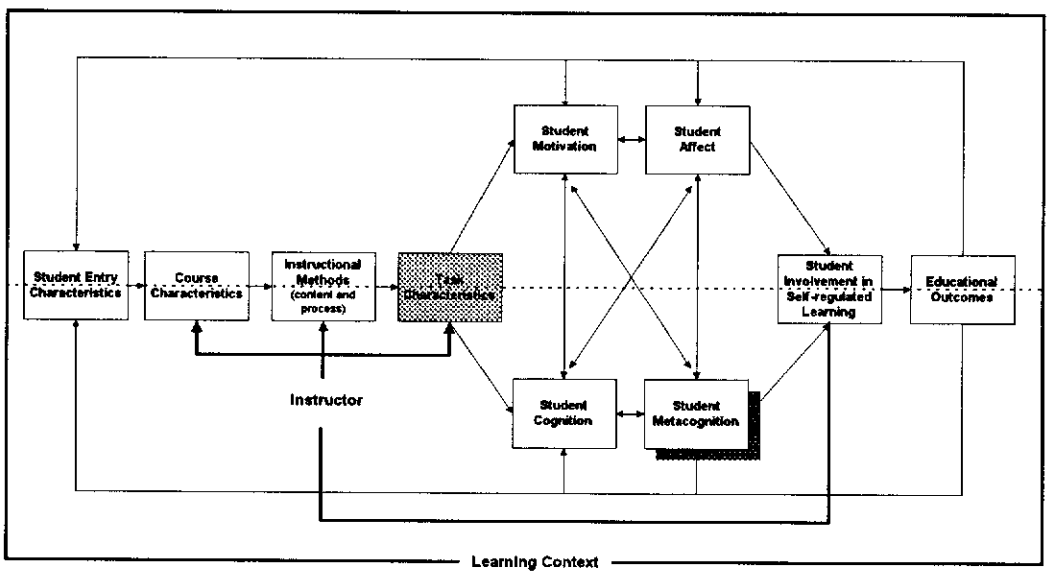


Figure 6.1 The refined Conceptual Model based on McKeachie, Pintrich, Lin and Smith's General Model of College Teaching and Learning, the literature on student learning, and the present study's findings.

First, the present study highlighted the importance of aligning student entry characteristics, course objectives and characteristics, instructional methods, and task characteristics, in order to promote academic achievement and student learning. How the domains were, therefore, re-conceptualised to show this alignment is illustrated in Figure 6.1. The horizontal dotted line highlights the alignment of the domains. Second, the findings consistently highlighted the influential role that assessment, in general, and the type of assessment tasks students engaged in, specifically, played in promoting student learning strategy use and learning behaviour. Thus, the extreme importance of the *Task Characteristics* domain in promoting student learning is represented conceptually by the shading of that domain in Figure 6.1. Third, in terms of instructional methods, the positive impact that "instructional style", "instructional strategies" and a positive learning climate had on student learning, was emphasised. The importance of focussing on both content and process variables in learning was

highlighted and is supported by Lucas (1990, p. 113) who suggests that, "traditionally when faculty have thought about preparing for class, they have focused on content. '*What* will I present?' Now, faculty in many institutions are beginning to recognise the importance of teaching style. '*How* will I present and what can I do to motivate my students?'". The importance of teaching both content and process is illustrated in the *Instructional Methods* domain in Figure 6.1.

Fourth, the findings of the present study suggest that there is a link between instructional methods, course objectives and set tasks, and instructors' perceptions of students' involvement in self-regulated learning. Specifically, in the present study, the instructional methods the instructor adopted appeared to be mediated by her beliefs, feelings and perceptions about the students' use of learning strategies and their involvement in learning. They were also related to positive and negative feedback from teaching experiences. The relationship between course characteristics, instructional methods and task characteristics, which is mediated by instructors' beliefs, feelings and perceptions, is represented by the bold line in the Model linking the *Course Characteristics*, *Instructional Methods* and *Task Characteristics* domains to the *Student Involvement in Self-regulated Learning* domain shown in Figure 6.1.

Fifth, the finding that metacognitive self-regulation may act as a director and controller of strategy use and thus, students' use of metacognitive strategies may only be brought into play in situations that require active management of learning, is illustrated by the shadowing of the *Metacognitive* domain shown in Figure 6.1. Sixth, the findings, specifically that academic performance was not a very good predictor of the differential effects of teaching, suggest that the *Academic Performance* domain should be expanded to include a focus not only on student achievement but also on other outcome measures, such as, students' use of cognitive and metacognitive learning strategies, their motivational orientations and their affective reactions. This wider outcomes focus is illustrated by renaming the *Academic Performance* domain, the *Educational Outcomes* domain as shown in Figure 6.1. Finally, the present study's findings suggest that the relationship between the cognitive, metacognitive, motivational and affective domains may be linked to the situational and contextual

demands of the learning environment and, therefore, with the context. The importance of the specific learning context is represented by the bold line surrounding the Model in Figure 6.1.

Using the Model

Use of the Model in the present study encouraged a research focus on instructional activities, task characteristics, student mediating variables, contextual factors, and educational outcomes. In addition, use of the Model allowed constructs from cognitive, metacognitive, motivational and affective perspectives to be differentiated and integrated. It also allowed an examination of how different cognitive, metacognitive, motivational and affective components operated together to influence learning in the everyday classroom context. Therefore, using the Model allowed a more comprehensive view of student learning and for conclusions to be drawn about efforts to inform instructional practice in a specific learning context. Further, use of the Model provided a basis for the categories which were used to code the interview data. Finally, the Model also provided a useful overarching structure for presenting the data.

Thus, the use of the Model supported the thrust of the present study which responded to the call to,

> ...include a greater emphasis on "grand theories" that can more holistically account for complex human psychological behavior and behavioral functioning in a variety of contexts that integrate principles of learning and motivation, of cognition and affect, and thus address the whole person in context.
> (McCombs, 1991, p. 117).

Implications for teaching and learning

The findings of the present study have implications for university teaching and learning, especially in the context of supporting first year students' learning and the need for developing lifelong learning skills as an outcome of a university education. The findings raise several issues related to the development of student learning, the

influence of students' prior learning on their current learning behaviours, the role of the learning context in learning, the tensions between content and process in the curriculum, and the instructor's and students' roles in teaching and learning in the first year of university. When discussing the above issues, new data, in the form of student comments, which are more anecdotal in nature, are introduced for illustrative purposes.

Developing student learning

Given the finding of the present study that many students, especially those who did not participate in the learning support programs, were neither being metacognitive about their learning nor reported using appropriate learning strategies, efforts are needed to assist all first year students to become more metacognitive about their learning and to use more appropriate cognitive and resource management strategies when learning. Students need to be helped to become more aware of their own learning and what works for them as learners because they may not otherwise realise the benefits of greater awareness and control of their learning. By instructors encouraging and developing students' metacognitive skills specifically, students will not only learn and understand the content more effectively, but will also develop a greater understanding of themselves as learners (Janssen, 1996). As Hadwin and Winne (1996) suggest, "higher education should not merely teach students knowledge in curricular subjects. Institutions should also provide means for students to develop adaptable strategies with which to pursue knowledge and solve problems during and after postsecondary experiences." (p. 1). However, as outlined in Chapter 2, traditional study skills approaches which typically are an adjunct to regular study and which often target "at risk" students and thus, assume a deficit model of student learning, have not been successful (Fuller, et al., 1995; Hadwin & Winne, 1996; Hattie, et al., 1996).

Further, Garner (1990) believes that because training in learning strategies remains situated in one context, only rarely will students use strategies in contexts other than those in which these are taught. Thus, in line with the findings of the present study,

any help which is offered should ideally be in the context of the students' regular discipline study and should use that study as the basis for any intervention. Furthermore, as suggested by current research on student learning (Boulton-Lewis, 1994; Boulton-Lewis, et al., 1996; Hattie, et al., 1996; Murray-Harvey, 1996) and the present study's findings, programs which assist students to become more effective learners should include a focus on student cognition, motivation and affect both as outcomes of, as well as precursors to, effective strategy use.

The findings of the present study suggest also that programs aimed at developing students' learning strategies and metacognitive skills should include strategies that actively foster self-regulation because, as McKeachie, Pintrich, Lin and Smith (1986) point out, it is much easier to teach about self-regulation of cognition than to actually facilitate regulation of cognition. Carefully selected strategies that not only include instruction in the what, how and why (declarative, procedural and conditional elements) of strategy use, but that also require students to practise the strategies when completing set work, are essential and valued by students. It appears that most students know what to do to be effective learners. What they have difficulty with is actually getting themselves to do it, as illustrated by the following comments:

> *"...really you should be looking at that list all of the time, you know. Everyone knows what to do, but I think when they take short cuts, to cut out a few things, they forget to look at the list and think hang on am I supposed to be doing that. I think everybody knows what to do. I mean they have been told it so may times, and yet they still..."* [$S_1$19]

The findings of the present study suggest that, to help students develop their learning strategy use, instructors need to provide more structure in the first year of study especially with the growing diversity of entering students, since, if the environment is too ill defined, students may find it more difficult to be self-directed. Further, students may not know what they are meant to do when requested to study. They, therefore, need to have set learning tasks, structured activities to complete out of class and prompts, in order to scaffold them in the transition phase.

Furthermore, the academic context should place demands on students to use appropriate learning strategies and provide help for them to develop these in the context of their discipline study. In particular, courses should be designed to provide sufficient levels of cognitive challenge to require students to use effective learning strategies and metacognitive skills, since optimal levels of challenge are associated with more strategic learning (Garner, 1990; Thomas & Rohwer, 1993). McInnis, James and McNaught (1995) report that "the need to provide students with a challenging academic environment in which the foundations for lifelong learning are established" (p. 111) was the strongest message emerging from their study. They, therefore, suggest that the first year at university should not be cognitively comfortable, nor should students be allowed to develop a false sense of competence because "most students need, enjoy, and indeed expect, university to provide them with intellectual challenges" (p. 111).

The findings of the present study also suggest that a focus on student learning should be made a legitimate part of the curriculum. Making the learning support a part of the curriculum will ensure that it is accepted and valued by instructors and students and will avoid it being seen as an add-on or adjunct to "core content". Further, strategies included in any support program should be selected carefully. A clear match between students' prior learning experiences, course objectives, material presented and assessment tasks, and support provided, should be made. Furthermore, if students are made aware of the inherent value and usefulness of the support to both their learning at university and to their future careers, they are more likely to be committed to and acknowledge the importance of, the skills to their learning and professional development. Finally, student feedback about the strategies included should be sought regularly and used to inform future practice. It is essential that students' perceptions are considered because how students perceive and interpret the support provided will ultimately influence whether they will accept and use it.

The findings of the present study also suggest that instructors need to include a focus on student cognition, metacognition, motivation, affect and learning behaviour, as well as on academic performance. Gentile (1996, p. 38) supports this view and states

that, while cognitive psychology suggests that meaningful learning "must be active..., constructive..., intentional..., and often metacognitive..., and social...", it leaves out the "emotional and behavioral components" of learning. Similarly, Brophy and Good (1986) suggest that most definitions of teaching effectiveness should include "success in socialising students and promoting their affective and personal development in addition to success in fostering their mastery of formal curricula" (p. 328). In addition, student participation and attrition rates may also provide insights into teaching effectiveness. For example, in the present study, the attrition figures supported the overall study's finding that including learning support was worthwhile. Figures (see Appendix 6.1) indicated that by the end of the Semester 2, the withdrawal rate of students who had participated in the Semester 1 learning support program was 11% compared to that of students in the regular group which was 20%, almost double.

Helping students to use more appropriate cognitive and resource management strategies, to become more metacognitive about their learning, to be more motivated and to feel more positive about their learning is especially critical for Education students who themselves will have to be models and supports for the next generation of learners. Therefore, Education programs should include courses on teaching effective learning, for example "learning-to-learn" and "effective teaching for effective learning", in order that prospective teachers become knowledgeable about learning and thinking.

Acknowledging prior learning

The present study's findings suggest that students' previous learning experiences played an important role in their beliefs about their learning strategies and their subsequent strategy use. In particular, students' experiences at high school played an important part in encouraging and developing their learning strategy use and, therefore, the impact that schools have on first year student learning should not be underestimated.

Unfortunately, previous learning contexts may not always be positive or foster the use of appropriate learning behaviours. For example, the finding that students entering university reported little use of strategies that assisted them to be metacognitive about their learning, to seek help, to think critically or to learn with peers when studying at high school, is cause for concern and suggests that teaching at schools tends to preclude the use of metacognitive and resource management strategies. In addition, the impact of negative learning experiences, notably a drop in motivation at high school, on subsequent learning experiences, is well documented (Anderman & Maehr, 1994). Further, because entry into universities is based largely on a high aggregate score in final examinations, some students, in their attempts to gain university entry, may focus on the use of surface strategies, notably the over-use of rehearsal or memorising strategies, at the expense of deep strategies characterised by learning for understanding. While a deep approach to learning, as well as being able to use a variety of well organised study methods, is meant to characterise the type of learning expected of students at university, the strategies students use to get into university may have an unfavourable impact on the strategies they use at university and their subsequent university performance (Ramsden, et al., 1989). If schools are to prepare students adequately for coping with further study or even everyday living beyond school, they should value strategies that promote deep learning and, in particular, should consider fostering metacognition as an important educational aim (Biggs & Moore, 1993).

Research by Martin, Bowden and Ramsden (1990) on how students cope with the move from high school to university, has found that students who could see similarities between their previous and present study were more likely to do well than students who focussed on differences between school and university learning. It is possible, therefore, that students in the present study who talked about their previous learning experiences as contributing in a positive way to the methods they used at university, making comments such as,

> *"We had actual sessions at school, they were called study skills sessions and we did them for 1 hour per week for the first semester...it [learning method] worked through year 12 so I stuck with it."* [$S_1$07]

"For like the single page of things we had a teacher and that is what we had to do. Like for each section we had to have a summary page and she had to see it and if we had any pictures she would try and show us how to stick them on and use different colours and everything like that. She was really good like that." [$S_1$06]

could be considered to have had an advantage over students who spoke negatively about their past experiences, for example,

"You just pick up little techniques here and there. No one has really sat down and told me this is what you do....which is sad...I think it would be good, in high school, if they have people that come out to you and talk to you about how to study effectively....you need to know how to study and how to do things like that. That doesn't seem to happen I don't think. I don't remember any of that happening at my school" [$S_1$02]

"I really don't think that I had some good high school teachers...The teachers weren't interested in formats...they didn't care about format, they didn't care about spelling, they didn't care about anything like that. All they wanted was content. So when we come into here we've actually got to, for each subject, write a special format. It becomes a bit...I never had to do that in high school...it's really difficult...now we got into trouble if we ever did that [used headings in an essay] at high school. It's really different...that's a lot different..." [$S_1$01]

First year students' prior learning experiences should be acknowledged and they should be helped to make positive links between previous and current study so that they may find the transition to study at university easier, more rewarding and more successful. Further, the strategies that are included in support programs should take into consideration students' previous experiences and instructors should accept that some students may potentially benefit more from the inclusion of learning support than others.

The role of the learning context

The important role of the learning context is acknowledged in the Conceptual Model underpinning this study and in the findings. In discussing the role which the learning context plays in student learning, the importance of the task characteristics, particularly the type of assessment tasks and feedback provided, the course characteristics, the instructional methods used, and the affective climate created have on student learning, are discussed in the following sections.

Task characteristics

The finding that students especially valued the inclusion of strategies that assisted them with assessment tasks which emerged strongly in the present study, highlights the role that assessment plays in student learning. According to Scouller (1998, p. 454) "assessment has been found to shape how much, how (their approach), and what (the content) students learn". This view is in contrast to the practices of some instructors who may focus on content covered in tutorials, lectures and out-of-class set readings as opposed to that covered in the assessed items. It appears, however, that students may not always share the instructor's views as illustrated by the following comment:

> *"I think a lot of it where they [instructors] say go and do it yourself, I think I don't really do much at all, like I think I would probably not do it unless it was something that was due and was assessable."* [$S_2$06]

Further, analysis of the instructor's Reflective Diary revealed that it was very difficult to provide effective learning support without both the instructor and the students focussing on the assessment tasks. While the instructor may encourage deep learning, many students will focus almost exclusively on the assessed items. As McKeachie and his colleagues state,

> Whatever teachers' goals and no matter how clearly they present them, students' goals are strongly influenced by tests or other activities that determine grades. No matter how much teachers try to nurture intrinsic motives for learning, students must still get acceptable grades to achieve other academic and vocational goals
> (Mckeachie, Pintrich, Lin & Smith ,1986, p. 76)

Shuell (1986, p. 429) suggests that it is helpful for instructors to remember that "...what the student does is actually more important in determining what is learned than what the teacher does" and Scouller (1998) states that,

> if academic staff genuinely want their students to be analytical and critical thinkers, and able to apply their learning to novel situations and transfer their learning to solve real problems (as professed as the main objectives in most course outlines) then their assessment methods should firstly, encourage the development of such abilities; and secondly, provide students with the opportunity to demonstrate that they have developed these higher order abilities.
> (Scouller, 1998, p. 469)

A close alignment is, therefore, needed between course objectives, learning activities and assessment tasks. However, this alignment may be very difficult to achieve by both experienced as well as novice instructors and is an area that requires great skill and expertise by the curriculum planner. However, if instructors do not pay close attention to the type of assessment in their courses, and if assessment items are not carefully designed, sequenced and marked, they may be undermining effective learning (Ramsden, 1992). This may have been the case in the present study, as illustrated by the following student's comments,

> *"...but the other tests weren't too bad after we knew that they weren't very difficult, really. If you just read over the chapter. A lot of people made heaps and heaps of notes but I didn't make a lot of notes because most of the tests were more common sense. Like what do you do if you discover a child cheating in the class? I mean...There was this one girl who for 2 tests she didn't know the 2 test were on, she turned up an said oh do we have a test today, and she ended up getting 9 out of 10, or 8 out of 10 because it was just common sense questions."* [$S_1$18]

Shepard (cited by Biggs & Moore, 1993) suggests that the techniques used for assessing learning have not developed in the past few years, while knowledge about the processes of learning and instruction has. As Biggs (1993, p. 379) points out, "in an age of electronic learning, our tests and examinations are driven by steam". Pintrich suggests that,

> if institutional researchers and administrators are serious about improving postsecondary teaching and learning, and if they plan to use assessment programs as one tool to reach this goal, then the assessment programs must be linked to strong theoretical frameworks of student learning, motivation, and instruction.
> (Pintrich,1988, p. 77)

Moreover, Biggs (1993) suggests that if educators are serious about getting students to become autonomous learners, then students should be encouraged gradually to

take over the evaluation process. He believes that self-evaluation is the core process in metacognitive acts "but a rarely cultivated process in the classroom" (p. 380). He concludes, therefore, that assessment should be reconceptualised as a cooperative act, with instructor and students mutually determining the extent and quality of the teaching and the learning. This view is more in line with the connotations of the word "assessment", which originated from the Latin, *assidere* meaning to sit beside. Therefore, the reasons for assessing students should be widened to incorporate all stages of the learning process. Assessment tasks which encourage students to engage continuously in learning and which foster deep learning, for example portfolio assessment, self-assessment and peer review should be used wherever possible (Dochy & McDowell, 1997). Thus, assessment can and should be used "as a positive force for improvement, both of teaching and learning" (Ramsden, 1992, p.73).

Type of assessment task and learning

Both students' learning predispositions and the strategies they perceive that the task requires will influence the strategies they use when completing the task (Tang cited in Biggs, 1993). Thus, students may modify their strategy use in response to the perceived task demands (Entwistle & Tait, 1990; Entwistle & Entwistle, 1991; Ramsden, 1988; Scouller, 1998). In the present study, an examination of the strategies students reported using when completing the set tasks supported this view and showed that the type of task set encouraged the use of different learning strategies. The objective multiple choice tests, made up of items selected from an item bank supplied by the authors of the set text, encouraged less use of cognitive strategies, notably elaboration and organisation, than did the instructor constructed short answer tests or the writing assignment. Overall, the writing assignment appeared to encourage the greatest use of all cognitive and metacognitive strategies, a finding supported by Scouller (1998, p. 456, 469) who states that "...the assignment essay provides the more appropriate context to learn, practise and demonstrate deeper level learning approaches and important communication skills...it allows students to demonstrate flexibility and exercise control over their learning". Further, comments made by some students in the interviews suggested that the type of learning task not

only encouraged the use of different learning strategies but also led to qualitatively different learning outcomes, for example,

> *"I think if there is just a test on something that is the way most people do it, cramming 5 mins before the test, just reading it very quickly, which is pretty much putting it all into instant recall. If there is an assignment then people actually put that into a practical sense and physically act it out and watch it in progress. That [doing an assignment] made me understand it rather than reading through it and reading through it, making notes and reading through it."* [$S_1$09]

This observation is supported by Scouller (1998, p. 469) who found that "students were aware that higher order intellectual skills were involved in essay writing" and that "in the assignment essay context, there was greater congruence between outcome, learning approach and perception with better results being associated with deep learning approaches and a perception that higher levels of cognitive abilities were being assessed".

However, as Ramsden, Beswick and Bowden (1986) point out, it is more difficult to construct tasks that encourage deep approaches to learning than those that encourage surface approaches. They suggest, however, that tasks that require students to "develop and display their capacities for exploring novel relationships, discovering patterns in data, creating conceptual frameworks to make sense of new information, realising the content structure of written discourse in a discipline, and tackling unfamiliar problems in a subject successfully", such as writing tasks, will promote the use of learning strategies that characterise deep approaches (p. 163). Further, based on the present study's findings, McKeachie, Pintrich, Lin and Smith (1986, p. 77) appear to be correct when they suggest that "even one good essay question may make a difference in student learning".

The role of feedback

The view that feedback given to students consistently makes a difference to their learning (McKeachie, et al., 1986) is supported by the present study's findings. For example, about half the students interviewed at the end of the Semester 2 mentioned that they believed obtaining feedback would assist them to learn. Further, in both

semesters students consistently rated submitting a draft and obtaining feedback using a feedback sheet, as the most successful strategy to assist them to learn.

While research suggests that feedback, which is formative, personalised and constructive, has a measurable effect on student learning, confidence and motivation, instructors may not always provide feedback or realise how important their feedback is to students (Maltby, Gage, & Berliner, 1995; McInerney & McInerney, 1994). Further, instructors who indiscriminately use either positive or negative feedback may not be assisting student learning (Maltby, et al., 1995). While providing the optimum level of feedback may be difficult and time consuming, the provision of feedback which is specific and includes suggestions for improvement as well as positive comments, is likely to increase student learning (Angelo, 1993; Butler & Nisan, 1986; Elawar & Corno, 1985). These findings are supported by student comments in the present study. Students' requests for detailed feedback, an indication of how their marks were allocated, the inclusion of positive comments, objective general feedback with suggestions for improvement, as well as personal one-on-one feedback sessions, are illustrated by the following comments:

> *"The feedback is really vital. I mean a lot of times when I get an assignment back they have a little comment at the end and I would prefer that they had red all over the assignment and said where I made the mistakes, say it right there you have done this wrong, fix it up this or that or just say you could have done it this way, but instead of doing it at the end of the paper, write the comments where the mistake has been made."* [$S_2$08]

> *"...I don't like just receiving something back and them not saying exactly where or where you didn't go wrong and especially I like a break down, report them, where the marks went sort of thing as well, so that you do know exactly what happened to the marks and where you lost them."* [$S_2$04]

> *"...And also positive reinforcement, positive constructive criticism rather than negative criticism because some lecturers were really negative..."* [$S_2$12]

> *"Not criticising us personally, but just pointing out general mistakes...because I think we tend to probably make the same mistakes over and over until somebody points it out to us... Maybe just point out the main sort of mistakes we have made over the semester in that particular class... like I have noticed in your essay writing you tend to do this, this, this and this and there is a better way of doing it, maybe next time if you try doing this and then if you try doing that... Perhaps going through a bad test, if you ever did a bad test... Maybe a summary of everyone's, the main errors that were made, I think that would help us learn..."* [$S_2$18]

"...and I think at the end of each class at the end of the year the teacher should make a time with each student and just go over their impressions of the student's work and how they can improve and what were the good things and what were the bad things that they noticed in tests and essays and perhaps even attitude whether they think their attitude to their work is good or bad and whether they think that affects their work. And suggestions for the next year how they can make it better, not criticising, but just suggestions you know..." [$S_2$18]

Also, contrary to what instructors might believe, students mentioned that they were willing to learn from their mistakes.

Course characteristics

The effects of course characteristics, in terms of the influence of the course focus, content and demands on learning behaviour, are documented in several studies. Biggs (1979) found that predispositions to surface learn were increased by instructions to learn the facts and details of a task. Similarly, Trigwell and Prosser (1991b) found that different course perceptions and approaches to learning were held by students when qualitative as opposed to quantitative outcomes were stressed (qualitative outcomes were associated with deep approaches and quantitative with surface approaches). Fuller, Chalmers and Kirkpatrick (1995) suggest that, even when students' initial learning intentions are high, if the learning context is new to students, requires them to master unfamiliar terms, concepts and theoretical perspectives, students' intentions are likely to be affected. Ramsden, Beswick and Bowden (1986) suggest that inappropriate assessment tasks and excessive amounts of content encourage surface approaches. Furthermore, Biggs (1993) points out that, because thinking and reflecting metacognitively is often a slow process, if students suffer "time stress" (p. 322) – generally from time constraints being imposed on their learning – they will not reflect on the strategies they are using, or think about which are the best ones to use, but instead will focus only on getting the task done. Gibbs (1992) stresses that courses which are too cognitively challenging encourage students to adopt surface approaches. Finally, Candy, Crebert and O'Leary (1994), contend that not linking learning to practice creates learning difficulties for students.

The course characteristics outlined above have been found to contribute to poor quality learning, student drop-out, negative student attitudes and inadequate transfer of learning to practical settings (Brand, 1994/1995; Chambers, 1992; McInnis, et al., 1995). Unfortunately, for students in the present study, as indicated in the interviews, questionnaires and Reflective Diary, many of these features appeared to be present and may, therefore, have contributed to the use of inappropriate strategies and negative learning outcomes, as illustrated by the following comments:

> *"To be honest in the end like I think one of the days I had like two or three main assignments due in and the test. The test was worth 10, the assignments were worth 30 and I just didn't study for the test and so every time I had one of those tests me and a couple of my friends would get here a couple of hours early and we would sit and study together...I mean I know that sounds a bit shoddy, but..."* [$S_2$12]

> *"I don't feel it is the best way to go. I know all the theories about reading it and so on, and the PQ4R method we covered, which I believe would work better. But also they are more time consuming, and with two education units and 3 maths units I was doing last semester, I was trying to keep the maths as well, to survive I probably spent more time on the maths than I did on the education...umm I might do [use different strategies] but then again it comes down to time, how much time have I got to do that. I have probably thought next time I might try something different and whether I actually do or not remains to be seen."* [$S_1$21]

Further, the finding that students in the regular group reported less use of the majority of learning strategies and reported lower motivation (notably in Semester 2) may have been confounded by many of the abovementioned course features, whereas the inclusion of learning support may have provided a buffer for students who participated in the learning support groups.

In summary, as Biggs suggests, in order to encourage appropriate student learning, instructors should,

> ...teach in an aligned way, so that the objectives, appropriately high level, are clear; that our teaching methods elicit from students those learning activities that are likely to achieve those objectives; and our assessment confirms that the students are in fact learning what our objectives say they should learn.
> (Biggs, 1995, p. 11)

Similarly, Dochy and McDowell (1997, p. 279) suggest that instructors should create "...powerful learning environments, where learning, instruction and assessment are fully integrated".

Instructional climate

University students who participate in courses that emphasise content only and that use traditional teaching approaches, increasingly adopt more surface approaches to their learning (for examples, see Biggs, 1993). In contrast, well structured environments which emphasise student autonomy and which offer supportive teaching, encourage students to adopt deep approaches to their learning (Ramsden, et al., 1989). Similarly, the findings of the present study suggest that first year students who participated in courses that focussed on both the content and the learning process, and that encouraged active involvement and created a psychologically supportive learning climate, were more likely to be associated with increases in students' use of learning strategies, motivation and positive feelings.

Learning effectively and achieving academically are important outcomes for both instructors and students. Therefore, instructors should be encouraged to familiarise themselves with the findings of current research on student learning, since an understanding of the advances in theoretical conceptions of learning should make a difference to the ways in which they think about the objectives of undergraduate learning and their own teaching. Instructors often "carry out their roles routinely, without attention to the ways by which the students' skills can be developed and without conscious awareness that different strategies may be appropriate for different situations" (McKeachie, et al., 1986, p. 1) and may be associated with different learning outcomes. It is important, therefore, for instructors to understand how students' use of learning strategies, their motivational orientations and affective reactions, mediate their achievement. A better understanding of the relationship between student learning and academic performance should be of great assistance to instructors as they attempt to implement in-context learning support programs (Hattie, et al., 1996).

Teaching students to be effective learners in the context of their discipline holds great promise, as it challenges many students and institutions who use teaching and learning strategies that undermine quality education, student learning and ultimately, student achievement. The role which organisational values and culture play in supporting and encouraging attempts to improve the quality of teaching and learning, are highlighted when such attempts are made.

Institutions need to provide support for instructors to develop their instructional styles and strategies. It is crucial, however, that institutions are careful not to respond to the call for the inclusion of learning strategies without providing adequate support on how to do so, because learning support is easily translated into more content. For example, instructors might interpret a call for the inclusion of learning strategies or the provision of learning support as "I must tell students how to summarise", "I must tell them how to take notes" and thus, present students with the rules of summarisation or writing models using direct instruction and therefore ultimately focussing on the what, (declarative knowledge) as opposed to the equally if not more important, how, why, when and where (procedural and conditional knowledge) and the practice aspects of learning. McKeachie, Pintrich, Lin and Smith (1986) highlight the importance of instructors' efforts to go "beyond simple presentation of information" and suggest that they should "also learn to foster the development of general cognitive learning strategies that may be flexibly brought to bear on questions of importance in their discipline" (p. 59). Similarly, Bransford (1986) suggests that instructors need to go beyond drill and practice methods to methods that encourage students to explain or defend their understanding to peers or to the instructor if understanding is to be achieved in ways that permit problem-solving strategies to be fully transferred.

Angelo (1994), as do Barr and Tagg (1995), suggests that both teaching and learning may be improved by universities focussing on learning and learners as opposed to teaching and teachers. While Angelo (1994, p. 4) believes that improving teaching is one way to improve student learning, he suggests that encouraging instructors to "help their students develop more effective study skills and strategies might be a more

direct, productive route to improved learning". He recommends that any development programs should focus on student learning, aim to help instructors develop self-awareness and the necessary skills to diagnose and improve their own teaching and their students' learning within their own disciplinary frameworks, and assist instructors to become aware of appropriate assessment procedures in order to evaluate their own teaching and their students' learning. Programs should also capitalise on instructors' intrinsic motivations, focus on meeting instructors' immediate and specific needs, make explicit connections to relevant discipline specific research on teaching and learning, and be designed to provide long-term and ongoing support.

The findings of the present study suggest, however, that in the majority of university classes, time was not set aside for students actively to discuss the content being covered, to work in small groups or to complete work in class. Students consider that this would be the best approach to take to assist their learning and research findings suggest that being given freedom to ask questions and discuss personal opinions improves student learning, curiosity, interest, motivation and achievement (McKeachie, et al., 1986). The view that students would prefer to have more time to discuss issues and complete work in class as opposed to sitting passively in lectures is highlighted by the following student's comments:

> *"...3hr lecture and a 1 hr tute, well I would rather see it the other way around!! Have 3 hrs of actual working and one hour of lecturing....[because] it is all very easy to sit back and say oh yeah that is the answer, it [attending lectures] is not active it is passive."* [$S_1$21]

Instructors should be able to balance the content with instruction on how to learn it. In other words, they should help students to "become aware of their own thinking and learning and to be effective managers of their own cognitive resources" (Jones, Palincsar, Ogle and Carr cited by Nickerson, 1988, p. 37). However, Nickerson (1988) contends that if instructors are not able to "think critically, reflectively and effectively they are not likely to be able to teach others to do so". If they are unable to "enjoy intellectual challenges [they] are unlikely to motivate students to seek them

out" (p. 9), and if they are not able to articulate their own beliefs and have them evaluated and discussed and adapt them based on reasonable feedback, they are not likely to "inspire active fair mindedness in anyone else" (p. 28).

Thus, courses aimed at assisting instructors to be effective teachers should focus on their beliefs and attitudes as well as their instructional methods. This may prove to be a very difficult task as it raises, amongst others, the following questions, "How do you ensure that all instructors are approachable, available, and supportive?", "How do you prevent them from showing their irritation at students' questions?", "How do you encourage them to stop telling and start teaching?", and "How do you get them to be reflective of their teaching and seek and act on student feedback?". These are all questions that have to be answered at the institutional level, with the institution examining their recruitment procedures, putting checks and balances into place and finding ways to recognise and reward good teaching if they are serious about changing first year teaching and learning (Ramsden, et al., 1995).

Affective climate

The findings from the present study on students' affective reactions suggest that students are very sensitive to the affective climate. Students' positive affective reactions, including their reactions when attending lectures and tutorials, were found to correlate positively with their academic performance. Instructors need to be aware of the importance of affect for learning and be empathetic to students, taking into consideration not only what students know in terms of the content or how they manage the content, but also their affective reactions to the content, the learning process and the learning environment. Radloff (1997) states that "students who feel positive about themselves as learners and enjoy learning are more likely to be motivated to undertake learning activities, to adopt deep approaches to learning, to persist with learning tasks and to reflect positively on their learning experiences and achievements" (p. 241). Therefore, instructors should be encouraged to make every attempt to acknowledge students' feelings and to assist them to manage these. Instructors should avoid adopting an instructional style or using instructional strategies that result in students feeling overly negative about learning and themselves

as learners. While the learning environment should not necessarily be anxiety free, it seems that an optimum level of affect, especially in relation to feelings of anxiety and worry, is necessary for students to perform at their best, as supported by the following comment:

> *"I've learnt not to stress out too much as I do not work at all well under pressure. This is not to say that I don't stress at all though! A little bit of worry can be productive as it shows you care. So, a test situation contains some stress if you want the outcome to be good!"* [S_2L_2 P61]

While McInnis, James and McNaught (1995) suggest that a certain level of anxiety is necessary in a learning environment, they postulate that the environment should also be one that students perceive to be supportive, with high but realistic expectations, as well as be demanding but not destructive of student confidence. While universities should encourage a "step towards intellectual independence in the first year by setting high expectations of performance...the notion of throwing the students in the deep end may simply be inappropriate across the whole higher education system" (p. 66). The present study supports these conclusions.

Overall, therefore, in relation to the learning context and student learning, the present study's findings reinforce the comments made by Entwistle (cited by Entwistle & Waterston, 1988) who cautions that there is a danger in focussing too narrowly on students' study processes as if they take place in a vacuum, because "approaches to studying are a product of the interaction between the characterises of individual students and their perceptions of courses, teaching and assessment procedures" (p. 264). Therefore,

> Any attempts to modify students' strategies are only likely to be effective if the learning environment is also changed in parallel to ensure that the recommended ways of studying are perceived by students to pay off within the reward structure of the courses.
>
> (Entwistle & Waterston, 1988, p. 264)

Rothkopf (1988) agrees that competence in learning strategy alone is "not sufficient for continued academic success. What is needed, in addition, is a supportive instructional environment" (p. 284).

An encouraging finding of the present study was that students are able to change the way they learn provided that the instructors and the context make this "possible, appealing, and /or unavoidable" (Miles, 1988, p. 335), as the comments below, from students who participated in the learning support program, illustrate:

> *"Ed101's contribution to my method was the explosion chart [concept map]... introduced the explosion charts, because I just used to write them all on study cards but I think the explosion chart is probably easier."* [$S_1$07]

> *"That's good actually [reflecting on learning],...because that makes us say exactly what we learnt. I like that actually...I really like that, I really do because we never had that before...when you sit there and say "what did you learn today?" you've actually got to think, well did I learn something today? I learnt this and you can tell them and then you think, yes I did learn that today and once you've said it, and once you've told everyone that's what I learnt today, then you believe it yourself..."* [$S_1$01]

> *"Ed101 helped, it made me do it [make a summary]. Sort of if I was doing it myself and you didn't say to do it that way and bring it in that week I probably would have done it kinda two days before the test or something, but because it was in your mind before it was easier to study for it. It was kinda already there from doing it beforehand."* [$S_1$06]

Therefore, putting energy into assisting first year students to develop their learning strategies, while not always easy, is a worthwhile investment. Providing students with learning support can be rewarding for students and their instructors, since, as McInnis, James and McNaught (1995) point out, students are "generally positive, they want to learn and most appreciate the challenge of independence" (p. 125).

Unfortunately, the present university climate may make providing learning support difficult. Students' learning often occurs in an environment that encourages passivity and limited involvement. It is possible, however, to create a positive climate that encourages students' academic involvement and deep learning (Barr & Tagg, 1995; Clarke & Dart, 1994) and small changes in teaching and learning may result in great educational gains for both students and instructors. However, such changes may

create tensions between the content of courses and the process of learning. This possibility is explored in the next section.

Tensions between content and process

Providing on-going and comprehensive in-context learning support may result in tensions for students, instructors and institutions. These may relate, firstly, to instructors whose teaching goals typically emphasise content rather than process and passive transmission of information rather than active construction of meaning. Secondly, they may relate to students who, because of their prior learning experiences and culture, expect to be taught rather than to learn. Thirdly, they may relate to institutional leaders who pay lipservice to the importance of good teaching while rewarding other activities. As a result of these tensions, few instructors may be willing to take responsibility for providing learning support for students especially since teaching in this way is at times both more difficult and more psychologically demanding than "transmitting content only" and also appears to be less valued by the university.

Nevertheless, given the changing nature of university study and the well documented learning needs of first year students, it is imperative that universities accept responsibility for ensuring that learning support is an integral part of all programs. Further, senior management must ensure that adequate resources and recognition are provided for instructors to develop and implement appropriate learning support programs, and that effective learning is accepted as an essential outcome of university study. Further, to encourage and support effective university teaching, institutions need to develop and implement appropriate policies, acknowledge the importance of leadership and showcase best practice (Angelo, 1995; Ramsden, et al., 1995). Miles (1988) suggests that without administrative support and instructor commitment, programs which support student learning will not be established or supported.

One reason more time is not devoted to providing system wide learning support is the resistance which instructors as subject specialists may have to the inclusion of learning

strategy instruction at the perceived expense of regular course content. Furthermore, many instructors may believe that it is not their duty to teach students how to learn and that, if such support is needed, it should be provided by someone else and somewhere else. They, therefore, may have little interest or motivation to teach learning skills and processes (Hadwin & Winne, 1996; Hattie, et al., 1996; Miles, 1988; Wilson, 1988). Students themselves may also have expectations that university study will provide them with content knowledge and thus, may express concern at what they perceive to be an emphasis on process rather than on content. This view is illustrated by the comments made by a student when asked if she thought in-context writing support sessions should have been included in Semester 2:

> *"No because I think if by second semester, if you are having any problems you should be able to go and see your lecturer individually, besides we had too much work to cover and we were missing lectures as it was because we were doing the tests in them...So I think we would have been missing too much time and those students that were fine would have been bored sitting there for a compulsory lecture or tute for 2 hours not needing it. So I think that if you needed it you could have gone and seen them anyway and if you didn't then that was your problem."* [$S_2$12]

While it is true that including learning support will result in some class time being diverted from teaching content, teaching learning strategies will in the longer term improve students' abilities to manage the content. This view is supported by the present study's findings that despite students in the learning support groups receiving less instruction time on the specific content of the course, they reported greater use of learning strategies, as well as improved motivational orientations and affective reactions by the end of the year. Moreover, their performance in Educational Psychology as measured by final grades was not affected. Further, providing students with a good start in learning will pay dividends as they progress through their courses (Weinstein, 1982).

Therefore, although the rewards in higher education for instructors may not be in devoting time and energy to helping students learn, instructors and those in leadership positions should recognise the benefits to students, instructors and the institution of adopting an approach which focuses on teaching both the content and processes of

learning in an integrated way. In addition, instructors, if required, should be given appropriate encouragement and assistance to develop curricular and instructional skills which would allow them to focus on both the process and content in their teaching.

Instructor's and students' roles

Most of the students in the present study were able to articulate their views of the role of the instructor in supporting their learning. Students emphasised the importance of the instructor providing support which took into account their feelings, and helped them to organise their learning through assistance with planning, scheduling and goal setting. Thus, from the students' perspectives, what they considered helped them learn was psychological support and help in managing the learning environment. This view is in contrast to the typical emphasis which many instructors place on transmitting knowledge. Instructors need to recognise that the current goals of university teaching go beyond transmitting knowledge to helping students develop their learning and metacognitive strategies, so that they can become lifelong learners (Candy, et al., 1994; Gallagher, 1994). In addition, the findings from the present study suggest that students new to university study want instructors who care about them and their learning and who provide structure and support which helps them to make the transition from school with its more structured learning environment to the university one which expects them to be independent and self-regulated learners. While instructors may prefer to have beginning students who are self-regulated learners with sophisticated views of learning, they should accept that the first step in helping students become self-regulated and effective learners is to find out where they are at and begin their teaching from there.

In order to help students to be effective learners and to manage the transition from high school to university, instructors should acknowledge students' views of the role instructors should play in the first year. A teaching-learning approach that students themselves recognise as effective and enjoyable is likely to produce better results and is more likely to be successful than one that encounters students' reticence, dislike or

doubt about its effectiveness (Volet, 1991). The educational implications of this view are that first year courses should take into consideration student needs and, therefore, be designed to provide the sort of learning environment which first year students describe as helping them learn. Such a developmental approach will make the first semester at university a successful and rewarding experience for more students. Instructors responsible for teaching first year courses should be aware of students' needs and be willing and able to adopt an instructional style and use instructional strategies which match these needs. Mechanisms where feedback about the teaching and learning context can be gathered from students in a non-threatening and constructive way should, therefore, be put into place (Angelo, 1991a; Angelo & Cross, 1993). The need for a "safe" way for students to give feedback to staff about the teaching-learning context, is illustrated by the following student's comments:

> *"I think they need to have more feedback workshops, anonymous ones where you can put down on sort of paper where you feel what, so you can express your opinion without feeling that you're going to be discriminated against in the future and you think 'they're going to pick on me'. So if you have your little suggestion box that is confidential you [would] feel safe putting forward what you think, it would be a good idea for the future."* [$S_2$12]

Instructors and students need to play their part in creating an effective learning environment. Instructors should accept that promoting student learning is an essential part of their teaching role and should be prepared to change the way they teach, actively seeking opportunities to increase their understanding of student learning and the instructional and assessment strategies which promote effective learning. Students should be prepared to take more responsibility for their own learning, to value knowledge and understanding and be willing to expend effort to develop learning-to-learn strategies. Furthermore, both instructors and students should develop the capacity for critical reflection (Erickson, 1986, p. 157). Overall, therefore, the responsibility for student learning, achievement and involvement at university should be a shared one between the university, instructors and students (Martin & Ramsden, 1987; Pintrich & Johnson, 1990; Sharwood, 1996; Tait & Entwistle, 1996; Willis, 1993). Only then, can instructors truly assist their students to be effective learners.

In summary, the findings of the present study have raised a number of issues which are important for assisting first year students to be effective learners. Firstly, if the goal of helping first year students to be effective learners is to be met, university courses need to ensure that students can and do use appropriate learning strategies and that learning environments promote positive motivational and affective student reactions. Increases in students' learning strategy use and positive changes in motivational orientations and affective reactions are most likely to occur when courses provide appropriate levels of cognitive challenge, students' prior learning experiences are acknowledged, instructors use appropriate instructional methods including a focus on both content and process, learning is appropriately assessed, students are given timely and meaningful feedback, courses are well designed in terms of focus, content and demands and positive learning climates that acknowledge the role of feelings in learning, are created. Secondly, in order to ensure that changes in teaching and learning are made and sustained, partnerships between students, instructors and the institution need to be created and all need to accept their roles and responsibilities. Finally, the interrelationships between teaching and learning and the teaching and learning context, are highly complex and context specific, and the effects of instruction are mediated by students' cognitive, metacognitive, motivational and affective characteristics.

Chapter 7

Conclusions

Strengths and significance of study
Limitations of study
Recommendations for educational practice
Suggestions for future research
Summary of study
Final comments

The strengths and significance, as well as the limitations of the present study, are discussed in this chapter. Further, recommendations for educational practice and suggestions for future research emanating from the study's findings are outlined. An overview of the present study and some final comments, conclude the chapter.

Strengths and significance of study

The present study has contributed to the area of student learning by adding to the knowledge of how to assist students to acquire discipline-specific learning skills in real life settings. The study has responded to the need for research on student learning which includes a focus on both students' and teacher's perspectives and in so doing has provided useful insights about teacher and student reactions to strategy instruction as it is implemented. Moreover, it has provided valuable insights into the learning behaviours and learning needs of first year students at a time when student demographics and learning needs are changing. The study has also responded to the call made by a number of researchers in the field for more ecologically valid research which involves naturalistic approaches and longitudinal designs.

The study has focussed specifically on exploring the role of affect in learning, a significant area that to date has not been well researched. It has also contributed to

the understanding of how student cognition, metacognition, motivation, affect and academic performance interact in a specific social and cultural context. The refinement of the Conceptual Model has illustrated the dynamic and complex relationships between student entry characteristics, task characteristics, instructional methods, educational outcomes and the learning context, and has provided a model of learners which mirrors their reality and experiences when studying. Finally, by using a combination of quantitative and qualitative methodologies the study has integrated data from multiple sources and has demonstrated the richness of information and the complementarity of views that can be obtained by systematically building on different approaches. A more holistic view of learning in a regular classroom has therefore been obtained.

The findings of the present study have implications for educational practice because as a greater understanding of the inherent variations in classrooms becomes available, better theories about the social and cognitive organisation of classrooms as environments for student learning can be built. A greater awareness of what is happening in university classrooms can inform decisions about changes in educational practice and efforts to make such changes.

The findings of the present study have specific implications for teaching first year students in terms of the need for individual courses to include appropriate learning support and for the support to be in context and provided by the discipline teacher. Courses should provide a cognitively challenging an supportive learning environment that encourages the use of appropriate learning strategies, include a range of tasks that foster student learning and higher level learning outcomes, use cognitive, metacognitive, motivational and affective outcomes as well as academic achievement as indicators of success in learning, acknowledge the use of appropriate instructional practices to foster student learning, and recognise the importance of obtaining students' views about their learning, by including opportunities for students to provide feedback on what helps and hinders their learning and to respond to their views.

Limitations of study

There are a number of limitations to the present study. The limitations are related to both the design and the methodology of the study and include the inability to differentiate between the effects of teaching learning strategies and the way in which they were taught, the use of interviews, the use of self-report questionnaires, the allocation of students to groups, the lack of gender balance, and the correlational nature of the study.

It was difficult to dissociate the effect of teaching the learning strategies and metacognitive skills from the way in which they were taught because the learning support program was conceptualised as a total program. Further, because the research literature on strategy training suggested that successful intervention programs should include a number of components addressing cognitive, motivational and contextual issues related to student learning, the researcher attempted to address all these issues in the teaching approach adopted and strategies selected and, therefore, the specific interaction of each cannot be known. Thus, from the outset, the study adopted a global approach and, therefore, was not designed to elucidate such specific information. However, Brown (cited by Volet, 1991) suggests that only once a "sizeable, durable and generalised effect" is obtained, should attempts be made to establish the specific impact of each of the components producing the effect.

The study used data collected from interviews. While general limitations of the interview technique and how the study attempted to deal with them have already been discussed in Chapter 3, problems associated with using this methodology could not be totally eliminated. For example, in a few cases, respondents, because of a lack of verbal proficiency, may have been disadvantaged by being asked to describe their strategy use orally. However, because the study's findings did not rely solely on the use of data gathered from interviews, this factor is unlikely to have had much bearing on the results.

Problems associated with the use of data collected from self-report questionnaires could not be totally eliminated either. While, as discussed in Chapter 3, questionnaires were administered on a number of occasions to avoid reliance on a one-off snapshot picture, the honesty of student' answers could not be guaranteed. McInnis, James and McNaught (1995) suggest, however, that "while there is occasional cynicism among academics about students' responses to items of this [self-report] kind", their experience suggests that "students are on the whole quite honest and fairly accurate in their assessment of their efforts" (p. 44).

Because classes of students were initially allocated to the instructor by the staffing coordinator in the first semester, and because the study's design required the use of intact groups in the second semester, it was not possible to control the composition of the classes and hence, the participants in the study. Thus, the samples of students used in the study may have been unrepresentative. However, given the nature and design of the study, the limited number of first year students and the protocol adopted by the Faculty of Education when enrolling students and allocating classes to instructors, no other way of allocating students to groups was possible.

Given the gender balance of students studying Education, that is, predominantly female, it was not possible to interpret the results in terms of possible gender differences. However, the gender distribution in the present study was typical of students undertaking studies in Education. In addition, although in the first semester the percentage of males in the learning support group and regular group was representative of the total male group, namely 12%, in the second semester the distribution of males changed, with the percentage of males in the regular group being greater than in the learning support group, namely 20% versus 5%. The difference was due to changes in group composition and exclusion from the statistical analysis of students who had participated in the learning support program in the first semester. However, while gender could have contributed to the differences between the regular group and learning support group, the small number of males makes it impossible to make any definitive conclusions based on gender. Further, given the naturalistic design of the present study, differences of this kind between groups were inevitable.

The correlational nature of the present study makes it impossible to make causal links between variables and, therefore, difficult to know exactly what components of the learning support program were responsible for differences in students' learning strategy use, motivational orientations, affective reactions and achievement outcomes. Thus, as already mentioned, attributing academic gains to the effectiveness of any component of the program is not possible.

The limitations outlined above suggest some caution when interpreting and ultimately generalising the findings of the present study. However, despite the limitations, the present study included an entire first year cohort, was conducted in an ecologically valid learning setting which involved learning over the natural time frame of a course of study, used multiple criteria for determining the learning support program's impact including cognitive, motivational and affective learning outcomes, and considered short-term and long term effects of providing learning support. Thus, the present study provides strong support for the educational potential of the instructional approach adopted for enhancing first year students' repertoire of learning strategies and metacognitive skills in the context of their discipline.

Recommendations for educational practice

The findings of the present study indicate that providing learning support to first year students may be associated with an increase in their learning strategy use – notably when completing writing tasks – motivational orientations and affective reactions. It is therefore, recommenced that first year courses include a focus on assisting students to be effective learners. Thus, in line with the findings of the present study, learning support programs should be integrated into existing courses and be designed to assist learners to become effective and realistic managers of their learning. They should acknowledge students' prior learning experiences, have the course objectives, instructional methods and task characteristics aligned, address contextual factors, and make students more aware of their own learning processes within particular subject areas. They should also include a focus on teaching good study habits, include

strategies that are context specific and relevant to the students' needs, and provide opportunities for students to practise the strategies taught.

Teacher Education programs, specifically, should include courses on teaching effective learning, such as courses in "learning-to-learn" and "effective teaching for effective learning", so that prospective teachers can become knowledgeable, not only about their own learning, but also about how to teach learning and thinking.

Further, given the present study's findings, instructors should acknowledge the central role that assessment plays in learning and ensure that assessment items are carefully designed, sequenced and marked. They should ensure that the content, focus and demands of their courses are realistic and encourage student learning, and that they use current research findings to improve their instructional practices and to create positive learning climates. Courses should also use changes in students' cognitive, motivational and affective orientations as well as achievement, as valid educational outcomes.

Student feedback about the teaching and learning context, obtained in a non-threatening and constructive way, should be used to inform the type and level of learning support required by students and to make appropriate design changes to existing courses. Instructors should be encouraged to seek regular feedback on the impact of their courses on student learning and to assess systematically students' use of learning strategies, motivational orientations and affective reactions.

Further, staff development programs that focus on assisting instructors to include in their courses an emphasis on developing student learning, should be offered to all university instructors. Universities should put mechanisms into place that acknowledge, encourage, support and reward instructors' attempts to improve the quality of teaching and learning.

Suggestions for future research

The present study has raised a number of questions about assisting students to be effective learners which could form the basis of future research in this area. Future research could include:

- undertaking a more detailed analysis of the strategies included and the instructional approach adopted by learning support programs, in order to establish the specific impact each of the components has on student learning and to determine their specific role in promoting student learning. A detailed analysis would make further suggestions about which individual strategies should be included in learning support programs and how they should be taught;

- developing better methods of assessing student learning and determining the impact of alternative assessment techniques on students' use of learning strategies, motivational orientations, affective reactions and educational achievement. In particular, more research is required on the learning outcomes of assessment driven curricula;

- exploring the relationship between gender and student learning;

- investigating the impact that offering staff development in learning strategy instruction may have on instructional approaches, specifically, establishing the amount and type of training needed so that teachers are adequately prepared for the task;

- investigating whether the inclusion of learning support can be sustained by instructors over the long term; and

- replicating the study in other practical settings by instructors who do not have a background in Education and in the principles of teaching and learning.

Summary of study

The study aimed to further theoretical and practical understanding of student learning by investigating the outcomes of providing in-context learning support to a group of first year Education students. Support was theoretically based, aimed to assist students to be effective learners, and was presented in-context by the discipline teacher.

Participants in the study were first year Education students undertaking either Early Childhood, Primary or Secondary programs. Students' ages ranged from 17 to 46 years with approximately 80% being less than 21 years of age. Almost 90% of the group were female and approximately 80% were school leavers. Students were enrolled in a core first year subject, Educational Psychology, which consisted of two semester-long courses, Ed101, Growth and Development and Ed102, Theories of Learning. Each course involved three hours of contact time per week – a one hour lecture and a two hour tutorial. Lectures focussed on the core content. Tutorial sessions were used for activities dealing with the designated topic set for the week which normally expanded on the ideas presented in the lecture and were supported by readings from the set textbook. In the first semester course, assessment comprised two written project reports together worth 40 marks, three short answer tests worth 10 marks each, and a final multiple-choice examination worth 30 marks. In the second semester course, assessment comprised one written project report worth 20 marks, one group presentation worth 20 marks, three short answer tests worth 10 marks each, and a final multiple-choice examination worth 30 marks.

At the beginning of each semester students signed up for a tutorial group, selecting a class which suited their timetable. Each tutorial group consisted of approximately 20 - 25 students. Permission was obtained to include learning support in two classes, which were taught by the researcher as part of her normal teaching responsibilities, in each semester. The remaining classes were taught by other staff in the conventional way.

Students in the classes in which learning support was included were informed in the first tutorials that the instructor was integrating learning support in their classes, and that, based on the literature, the method should be at least as effective if not better than the more traditional methods of teaching content only. Students were given the opportunity to change to another class if they did not wish to participate in the learning support program. All, however, agreed to be involved in the program.

The learning support program was based on an integrated cognitive, behavioural and social learning approach. Underlying both the approach adopted and the strategies selected was the view that learners are active participants in learning and that learning involves a change in the way learners think, feel and behave. The learning support program was implemented over two semesters. In the first semester, the program focused on the role of goals for learning, cognitive learning strategies (rehearsal, elaboration, organisation) metacognitive learning strategies (planning, monitoring, evaluating and reflecting), resource-management and writing practice with feedback. In the second semester, the program was expanded and further developed based on the outcomes from the first semester, including more focus on specifically developing students' elaboration skills. In addition, to gain information on the length and timing of providing learning support, the program implemented in the first semester was implemented again in the second semester with a new group of students.

Throughout the implementation of the program, the instructor endeavoured to ensure that students were informed and active participants in their own learning. The approach adopted to teach the learning strategies used modelling, practice with feedback, group work, open discussion, personal reflection and self-reinforcement. When implementing the first semester program, the instructor adopted a more directive approach, regularly monitoring student use of learning and study strategies and setting specific out-of-class tasks. When implementing the expanded program in the second semester, the instructor focused more on learning for understanding and encouraged students to take greater responsibility for their own learning. Throughout the implementation, the instructor was reflective and endeavoured to be sensitive and responsive to student feedback.

In each tutorial session, time was set aside for students to set individual *learning goals*, record, monitor and evaluate their goals, and to reward themselves when they met their goals. Students were specifically instructed on the value of setting learning-oriented goals that focused on mastery and understanding of new concepts, as opposed to extrinsic ego-oriented goals which generally focus on performance being based on grades and competition. Mastery goals were specifically focussed on because research has shown that they facilitate students' use of learning strategies and adaptive motivational patterns. Further, students were encouraged to set specific, proximal and challenging goals as setting these types of goals has been found to be effective in influencing students' self-regulatory behaviours. Specific attention was paid to ensuring that students had control over the goals they were setting and that they rewarded their goal achievement privately.

Training in the use of *cognitive learning strategies (rehearsal, elaboration, organisation)* was also included in the program. Students discussed the value of using different learning strategies for effective learning. They talked about and used rehearsal, elaboration and organisational strategies. Rehearsal strategies included underlining and highlighting, creating mnemonics, and reciting information to be learned; elaboration strategies included paraphrasing, actively relating information to what is known, summarising weekly readings, and organisation strategies included concept mapping and creating hierarchical outlines of weekly readings.

With regard to developing students' *metacognitive skills*, students were encouraged to talk about and reflect on their own learning and plan, monitor and adapt their learning strategy use. Time was set aside in class for students to discuss the strategies they used when studying for the tests and also to modify these where necessary. At the end of each tutorial, students were encouraged to reflect on what they had learnt, and were specifically asked by the teacher "What did you learn today?". Students were invited or volunteered to share their learning outcomes with the class.

Support also included a focus on the use of *resource-management* strategies. At the beginning of the semester, students were given a calendar and time was set aside in

class to complete it, noting due dates for all their assignments and other learning activities. Students were encouraged to refer to the calendar regularly and to plan their study and completion of assignments taking into consideration all demands on their time. After the mid-semester break, students revised their calendars and completed a 'tasks to be completed' list in class. They were encouraged to reward themselves when they had completed tasks on their list. During the first semester, the instructor reminded students on a weekly basis of work to be completed and modelled good time management strategies. In the second semester however, the instructor left students to monitor their own time management.

In terms of developing students' *writing skills*, students were asked to submit a draft copy of the essay section of their project reports in both semesters. Students were scaffolded by having the essay's criteria clearly outlined, the allocation of marks made clear, reference books placed in the library on Closed Reserve (in the first semester only), being taught how to complete the task and given class time to work on their draft. Drafts were marked and detailed feedback was given, using a feedback sheet. The feedback sheet was generated from the essay requirements as well as from an initial reading of the drafts which revealed commonly recurring errors. Marked drafts were returned to students within a week. The feedback method was explained to students and they were encouraged to use feedback to revise their drafts.

Students' reactions to the learning support program were monitored and evaluated. A variety of measures, both quantitative and qualitative, were used to obtain feedback on their learning strategy use, motivational orientations, affective reactions, and perceptions of the strategies included in the support program and the learning context. For comparative purposes, the same measures were used to gather data from students in the same first year group who did not participate in the learning support program.

In terms of learning strategy use, all first year students completed the Motivated Strategies for Learning Questionnaire (MSLQ) at the beginning and end of the first semester and again at the end of the second semester, and results were presented as effect sizes. In addition, a sample of students from the learning support and regular groups were interviewed at the end of each semester.

Analysis of the MSLQ data suggested that for students' learning strategy use, effect sizes were more positive for the students who participated in the first semester learning support program for all strategies except critical thinking. Exceptionally large differences for students' use of organisation, metacognitive self-regulation and effort regulation strategies and very small differences for their use of help seeking strategies, were found. Participating in the expanded learning support program implemented in the second semester suggested that effect sizes were more positive for students' use of all strategies other than organisation, metacognitive and effort regulation strategies. Large pre-post effect size differences for students' reported use of critical thinking and time and study environment strategies, were found. Analysis of student responses to the interview questions relating to the strategies used when learning for the tests and for the examination, supported the MSLQ data findings.

In terms of students' motivational orientations, effect sizes were more positive for the students who participated in the first semester learning support program than those who had not for all motivational orientations except control of learning beliefs and self-efficacy for learning and performance. Large differences in students' test anxiety were reported, with students who participated in the learning support program reporting less anxiety. At the end of the second semester, effect sizes for all motivational orientations were more positive for students who participated in the expanded learning support program than those who did not. Exceptionally large differences in terms of students' reported task value perceptions and control of learning beliefs and very large differences in terms of their intrinsic goal orientations and reduction in test anxiety, were found.

Students' affect, specifically anxiety, was measured using the State-Trait Anxiety Inventory (STAI). In addition, affect including anxiety was measured using a version of Zuckerman's Affect Adjective Checklist (AACL). Students' levels of confidence, worry and discomfort when attending lectures and tutorials, working on assignments, reading the textbook, and when studying for the course were measured at the end of each semester using a self-report survey, Perceptions of Being a First Year Student.

At the end of the first semester, as measured by both the STAI and the AACL, there were no educationally significant differences in the level of anxiety associated with participating in either the learning support or regular group. However, at the end of the second semester, being in the learning support group appeared to be associated with small decreases in students' anxiety, while being in the regular group appeared to be associated with a small increase in anxiety. In terms of confidence and worry, no differences were found between the groups at the end of the first semester. However, a statistically significant difference between the learning support and regular group in terms of perceived level of discomfort when working on a writing assignment and when attending lectures and tutorials, was found with students in the learning support group reporting less discomfort. At the end of the second semester, statistically significant differences were found for students' perceived levels of discomfort in the tutorials, with students in the learning support group again reporting significantly less discomfort than the regular group.

Analysis of both quantitative and qualitative data suggested that there was a positive relationship between students' use of selected cognitive strategies, motivational orientations and affective reactions, and achievement in the Educational Psychology (Ed101 and Ed102) courses.

Students' views about the specific strategies used in the learning support programs were obtained by administering the Student Appraisal of Teaching and Learning Strategies Survey (SATL) at the end of each semester. In addition, students who had participated in the learning support programs were asked in the interviews to rate the learning support strategies that were used in the tutorials. The most highly rated strategies by students who participated in the first semester learning support program were submitting a draft, obtaining feedback using a feedback sheet, writing summaries for homework before the tests, working in small groups, and outlining the text book chapters. In the second semester, the most highly rated strategies by students who participated in the expanded learning support program were submitting a draft, being given a 'summary outline' to complete, making a summary each week, having tutorial activities that relied on students doing the summary, and completing the calendar at

the beginning of the semester. Further, students who participated in the first and second semester learning support programs were more likely to mention specifically the positive role of the instructor in helping them to learn.

The instructor's views of providing learning support were obtained using a Reflective Diary. Analysis of the diary revealed that providing learning support was at times both uplifting and rewarding and at other times difficult and psychologically demanding. Positive instructor reactions were associated with students' positive attitudes and reactions to the learning support provided. Negative instructor reactions were mainly associated with student factors, notably their negative response to the learning support provided and the difficulty students experienced with turning their strategic knowledge into action.

The present study showed that when learning support was provided, students' use of learning strategies increased and their motivational orientations and affective reactions showed positive changes. Further, changes were associated with both the timing and length of the support provided, as well as with the type of support provided. In relation to students' use of learning strategies specifically, the type of assessment tasks students engaged in and the learning context, appeared to influence the strategies they used and their beliefs and feelings about their strategy use. Although there appeared to be a relationship between selected cognitive, motivational and affective variables, the relationship between learning and the use of metacognitive self regulation strategies was not clear-cut. However, given the nature of the study and data analysis, no causal relationships can be inferred. In terms of student and instructor perceptions, student perceptions of engaging in a course in which learning support was provided, appeared to be positive. Further, a teaching style that was supportive and instructional strategies that encouraged active learning, were valued by students. Instructor perceptions indicated that, while providing learning support was both challenging and uplifting, the type of support provided and student reactions influenced the instructor's perceptions and affective reactions.

Final comments

The present study has important implications for student learning, particularly in assisting students to be effective learners. Once universities and instructors have fulfilled their roles by ensuring that students have an appropriate learning environment that fosters lifelong learning, the responsibility to be effective learners ultimately lies with the students. However, the present study has illustrated that despite support being provided, some students still find it difficult to cope with the demands of university study. Essentially, at the heart of their struggles is that while many of them know what they need to do to be effective learners, many find turning knowing into doing very difficult. Students may make concerted efforts to take control of their learning and instructors and institutions may assist them in their endeavours by making certain that the learning demands placed on them are appropriate and by providing them with "widely applicable skills that are portable beyond narrow classroom demands" (Rothkopf, 1988, p. 285). However, both instructors and students must face the real moral and human dilemma created when any attempts are made to change behaviour, a dilemma illustrated by Cathy.

The West Australian, Monday December 2 1996.

Therefore, not only gaining knowledge but also being able to translate that knowledge into sustainable action, remains at the heart of any attempt at personal or educational reform.

References

Abouserie, R. (1995). Self-esteem and achievement motivation as determinants of students' approaches to studying. *Studies in Higher Education, 20*(1), 19-26.

Alderman, M. K., Klein, R., Seeley, S. K., & Sanders, M. (1993). Metacognitive self-portraits: Preservice teachers as learners. *Reading Research and Instruction, 32*(2), 38-54.

Ames, C. (1992). Achievement goals and the classroom motivational climate. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 327-348). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Student learning strategies and motivation processes. *Journal of Educational Psychology, 80*, 260-267.

Anderman, E. M., & Maehr, M. L. (1994). Motivation and schooling in the middle grades. *Review of Educational Research, 64*(2), 287-309.

Angelo, T. A. (1991a). Introduction and overview: From classroom assessment to classroom research. In T. A. Angelo (Ed.), *Classroom research: early lessons from success* (pp. 7-15). San Francisco: Jossey-Bass.

Angelo, T. A. (1991b). Ten easy pieces: Assessing higher learning in four dimensions. *New Directions For Teaching And Learning, 46*, 17-31.

Angelo, T. A. (1993). A "teacher's dozen": Fourteen general, research based principles for improving higher learning in our classrooms. *AAHE Bulletin, 45*(8), 3-7, 13.

Angelo, T. A. (1994). From faculty development to academic development. *AAHE Bulletin, June*, 3-7.

Angelo, T. A. (1995). Improving classroom assessment to improve learning: Guidelines from research and practice. *Assessment Update, 7*(6), 1-2, 12-13.

Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). San Francisco: Jossey-Bass.

Applebee, A. N. (1986). Problems in process approaches: toward a reconceptualisation of process instruction. In A. R. Petrosky & D. Bartholomae (Eds.), *The Teaching of writing. Eighty-fifth Yearbook of the National Society for the Study of Education* (pp. 95-113). Chicago, Illinois: University of Chicago Press.

Assor, A., & Connell, J. P. (1992). The validity of students' self-reports as measures of performance affecting self-appraisals: Definitions and theoretical considerations. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 25-47). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Astin, A. W. (1993). *What matters in college? Four critical years revisited.* San Francisco: Jossey-Bass.

Atkins, S., & Murphy, K. (1993). Reflection: A review of the literature. *Journal of Advanced Nursing, 18*, 1188-1192.

Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. Spence & J. Spence (Eds.), *The psychology of learning and motivation: Advances in research and theory* (pp. 90-191). New York: Academic Press.

Baird, J. R., & White, R. T. (1984, April). *Improving learning through enhanced metacognition: A classroom study*. Paper presented at the meeting of the American Educational Research Association, New Orleans.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood-Cliffs, New Jersey: Prentice-Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.

Barr, R. B., & Tagg, J. (1995). From teaching to learning - a new paradigm for undergraduate education. *Change, 27*(6), 13-25.

Beckwith, J. B. (1991). Approaches to learning, their context and relationship to assessment performance. *Higher Education, 22*, 17-30.

Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Berliner, D. C. (1989). Furthering our understanding of motivation and environments. In C. Ames & R. Ames (Eds.), *Research on motivation in education, volume 3, goals and cognitions* (pp. 317-342). San Diego: Academic Press.

Biggs, J. (1987). *Student approaches to learning and studying*. Hawthorn, Victoria: ACER.

Biggs, J. (1993). What do inventories of students' learning processes really measure? A theoretical review and clarification. *British Journal of Educational Psychology, 63*, 3-19.

Biggs, J. (1995). *Student approaches to learning, constructivism, and student-centered learning.* Paper presented at the Twentieth International Conference, Improving University Teaching, University of Maryland University College and City University of Hong Kong, Hong Kong.

Biggs, J. B. (1979). Individual differences in study processes and the quality of learning outcomes. *Higher Education, 8*, 381-394.

Biggs, J. B. (1988, April). *Students' approaches to essay-writing and the quality of the written product.* Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.

Biggs, J. B., & Moore, P. J. (1993). *The process of learning* (3rd ed.). Sydney: Prentice Hall.

Boekaerts, M. (1993). Being concerned with well-being and with learning. *Educational Psychologist, 28*(2), 149-167.

Boekaerts, M. (1995). Self-regulated learning: Bridging the gap between metacognitive and metamotivation theories. *Educational Psychologist, 30*(4), 195-200.

Borg, W. R., & Gall, M. (1989). *Educational research: An introduction* (5th ed.). Melbourne: Longman.

Borkowski, J. G., Carr, M., Rellinger, E., & Pressley, M. (1990). Self-regulated cognition: Interdependence of metacognition, attributions, and self-esteem. In B. F. Jones & L. Idol (Eds.), *Dimensions of thinking: Review of research* (pp. 53-92). New Jersey: Lawrence Erlbaum Associates.

Boulton-Lewis, G. (1994). Tertiary students' knowledge of their own learning and a SOLO taxonomy. *Higher Education, 28*, 387-402.

Boulton-Lewis, G. M., Wilss, L., & Mutch, S. (1996). Teachers as adult learners: Their knowledge of their own learning and implications for teaching. *Higher Education, 32*, 89-106.

Bowden, J. (1988). Achieving change in teaching practices. In P. Ramsden (Ed.), *Improving learning: New perspectives* (pp. 255-267). London: Kogan Page.

Brand, D. L. (1994/1995). Those students who could have but didn't - early attrition from college science. *Journal of College Science Teaching, 24*(3), 89-106.

Bransford, J., Sherwood, R., Vye, N., & Rieser, J. (1986). Teaching thinking and problem solving: Research foundations. *American Psychologist, 41*(10), 1078-1089.

Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology, 83*(3), 405-410.

Brophy, J., & Good, T. L. (1986). Teacher behaviour and student achievement. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.) (pp. 328-375). New York: Macmillan.

Brown, A. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. E. Weinert & R. H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65-116). Hillsdale: Lawrence Erlbaum Associates.

Brown, A. L. (1980). Metacognitive development and reading. In R. J. Shapiro, B. C. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 453-481). Hillsdale, NJ: Lawrence Erlbaum Associates.

Brown, A. L., Campione, J. C., & Day, J. D. (1981). Learning to learn: On training students to learn from text. *Educational Researcher, 10*, 14-21.

Brown, A. L., & Day, J. D. (1983). Macrorules for summarising texts: The development of expertise. *Journal of Verbal Learning and Verbal Behavior, 22*, 1-14.

Brown, A. L., & Palincsar, A. S. (1982). Inducing strategic learning from texts by means of informed, self-control training. *Topics in Learning and Learning Disabilities, April*, 1-17.

Brown, G., & Atkins, M. (1988). *Effective teaching in higher education*. London: Routledge.

Brown, J., & Langer, E. (1990). Mindfulness and intelligence: A comparison. *Educational Psychologist, 25*, 305-355.

Burns, R. B. (1990). *Introduction to research methods in education*. Melbourne: Longman Cheshire.

Burroughs-Lange, S. G., & Lange, J. (1993). *Denuded data! Grounded theory using the NUD•IST computer analysis program: In researching the challenge to teacher self-efficacy posed by students with learning disabilities in Australian education.* (ERIC Document Reproduction Service No. ED 364 193)

Butler, R., & Nisan, M. (1986). Effects of no feedback, task-related comments, and grades on intrinsic motivation and performance. *Journal of Educational Psychology, 78*, 210-224.

Campione, J. C., Shapiro, A. M., & Brown, A. L. (1995). Forms of transfer in a community of learners: Flexible learning and understanding. In A. McKeough, J. Lupart, & A. Marini (Eds.), *Teaching for transfer: Fostering generalization in learning* (pp. 35-68). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Candy, P. C., Crebert, G., & O'Leary, J. (1994). *Developing lifelong learners through undergraduate education.* (Commissioned Report No. 28). National Board of Employment, Education and Training. Canberra: Australian Government Publishing Service.

Carver, R. P. (1996). The case against statistical significance testing, revisited. *Journal of Experimental Education, 61*(4), 287-292.

Chalmers, D., & Volet, S. (1997). Common misconceptions about students from South-East Asia studying in Australia. *Higher Education Research and Development, 16*(1), 87-98.

Chalmers, D., & Volet, S. E. (1992, July). *How stable are university students' learning characteristics? Identifying dynamic adjustments in goals and study strategies.* Paper presented at the Seventh Australian Developmental Conference, Brisbane, Australia.

Chambers, E. (1992). Work-load and the quality of student learning. *Studies in Higher Education, 17*(2), 141-153.

Chance, P. (1993). Sticking up for rewards. *Phi Delta Kappan, 74*, 787-790.

Clark, R. E. (1980, April). *Do students enjoy the instructional method from which they learn the least? Antagonism between enjoyment and achievement in ATI studies.* Paper presented at the Annual Convention of the American Educational Research Association, Boston.

Clark, R. E. (1990). When teaching kills learning: Research on mathematics. In H. Mandl, E. d. Corte, N. Bennett, & H. F. Friedrich (Eds.), *Learning and instruction* (pp. 1-22). Oxford: Pergamon Press.

Clarke, J. A. (1995). Tertiary students' perceptions of their learning environments: A new procedure and some outcomes. *Higher Education Research and Development, 14*, 1-12.

Clarke, J. A. (1998). Students' perceptions of different tertiary learning environments. *Higher Education Research and Development, 17*(1), 107-117.

Clarke, J. A., & Dart, B. C. (1994, November). *The relationship between students' approaches to learning and their perceptions of what helps and hinders their learning.* Paper presented at the Annual Conference of the Australian Association for Research in Education, Newcastle, NSW.

Clements, P. (1992). *Achieving equitable outcomes: The effect of lower socioeconomic and non-English speaking backgrounds on entry, participation and academic backgrounds at Curtin University of Technology.* Perth: University Counselling Services, Curtin University of Technology.

Cliff, A. (1995). A qualitative review of study behaviour before and during the first year of engineering studies. *Higher Education, 29*, 169-181.

Cohen, J. (1969). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.

Cohen, L., & Manion, L. (1989). *Research methods in education* (3rd ed.). London: Routledge.

Corno, L. (1994). Student volition and education: Outcomes, influences, and practices. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance. Issues and educational applications* (pp. 229-251). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Corno, L., & Snow, R. E. (1986). Adapting teaching to individual differences among learners. In M. C. Wittrock (Eds.), *Handbook of research on teaching.* New York: MacMillan.

Covington, M., & Omelich, C. (1987). "I knew it cold before the exam": A test of the anxiety-blockage hypothesis. *Journal of Educational Psychology, 79*, 393-400.

Crebert, R. G. (1994). *HEC / AVVC project on the enabling characteristics of undergraduate education. Discussion paper.* Queensland University of Technology.

Dart, B. C., & Clarke, J. A. (1991). Helping students become better learners: A case study in teacher education. *Higher Education, 22*, 317-335.

de la Harpe, B., & Radloff, A. (1996, July). *To draft or not to draft when writing an essay? First year students answer the question.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Perth, Western Australia.

de la Harpe, B., & Radloff, A. (1998, July). *Do first year students reflect on their learning? Why they should and how they can.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Auckland, New Zealand.

de la Harpe, B., Radloff, A., & Parker, L. (1997, July). *The relationship between first year students' use of metacognitive control strategies and academic achievement.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Adelaide, South Australia.

Denzin, N. K. (1988). Triangulation. In J. P. Keeves (Ed.), *Educational research methodology, and measurement: An international handbook* (pp. 511-513). Sydney: Pergamon Press.

Derry, S. J. (1992). Beyond symbolic processing: Expanding horizons for educational psychology. *Journal of Educational Psychology, 84*, 413-419.

Derry, S. J., & Murphy, D. A. (1986). Designing systems that training learning ability: From theory to practice. *Review of Educational Research, 56*, 1-39.

Dickinson, D. J., & O'Connell, D. Q. (1990). Effect of quality and quantity of study on student grades. *Journal of Educational Research, 83*(4), 227-231.

Dochy, F. J. R. C., & McDowell, L. (1997). Introduction: Assessment as a tool for learning. *Studies in Educational Evaluation, 23*(4), 279-298.

Docking, R. A., & Thornton, J. A. (1979, November). *Anxiety and the school experience.* Paper presented at the Annual Conference of Australian Association for Research in Education, Melbourne.

Duffy, D. K., & Jones, J. W. (1995). *Teaching within the rhythms of the semester.* San Francisco: Jossey-Bass.

Dunlap, W. P., Cortina, J. M., Vaslow, J. B., & Burke, M. J. (1996). Meta-analysis of experiments with matched groups or repeated measures designs. *Psychological Methods, 1*(2), 170-177.

Dunston, P. J., & Ridgeway, V. G. (1990). The effect of graphic organizers on learning and remembering information from connected discourse. *Forum for Reading, 22*(1), 15-23.

Durkin, D. (1979). What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly, 14*, 481-438.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040-1047.

Educational Research Advisory Unit. (1990). *Freedom and responsibility: Making the transition from school to university* (Report No. 82). University of Canterbury, E.R.A.U.

Eklund-Myrskog, G. (1996, July). *Students' choice of different conceptions of learning in theoretical studies and practice within teacher education.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Perth, Western Australia.

Elawar, M. C., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology, 77*, 162-173.

Entwistle, N. (1984). Contrasting perspectives on learning. In F. Marton, D. Hounsell, & N. Entwistle (Eds.), *The experience of learning,* (pp. 1-18). Edinburgh: Scottish Academic Press.

Entwistle, N. (1988). Motivational factors in students' approaches in learning. In R. R. Schmeck (Ed.), *Learning strategies and learning styles* (pp. 21-51). New York: Plenum.

Entwistle, N. (1995). Frameworks for understanding as experienced in essay writing and in preparing for examination. *Educational Psychologist, 30*(1), 47-54.

Entwistle, N., & Tait, H. (1990). Approaches to learning, evaluations of teaching, and preferences for contrasting academic environments. *Higher Education, 19*, 169-194.

Entwistle, N., & Tait, H. (1993, April). *Approaches to studying and preferences for teaching in higher education: implications for student ratings.* Paper presented at the Annual Convention of the American Educational Research Association, Atlanta.

Entwistle, N., & Waterston, S. (1988). Approaches to studying and levels of processing in University students. *British Journal Educational Psychology, 58*, 258-265.

Entwistle, N. J. (1993). Student learning and instructional principles in higher education. Appendix A. In A. Macfarlane (Ed.), *Teaching and learning in an expanding higher education system.* Edinburgh: Committee of Centrally Funded Colleges.

Entwistle, N. J., & Entwistle, A. C. (1991). Contrasting forms of understanding for degree examinations: The student experience and its implications. *Higher Education, 22*, 205-227.

Entwistle, N. J., & Ramsden, P. (1983). *Understanding student learning.* London: Croom Helm.

Erickson, F. (1986). Qualitative methods in research on teaching. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 119-161). New York: Macmillan Publishing Company.

Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review, 87*, 215-251.

Evertson, C. M., & Green, J. L. (1986). Observation as inquiry method. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 162-213). New York: Macmillan Publishing Company.

Fox, B., & Radloff, A. (1996, July). *We're working hard but are we working smart? Some ideas to 'unstuff' the curriculum.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Perth, Western Australia.

Fraser, B. J., & Fisher, D. L. (1982). Effects of anxiety on science-related attitudes. *European Journal of Science Education, 4*(44), 441-450.

Fuller, R., Chalmers, D., & Kirkpatrick, D. (1994, July). *Teaching university students learning and study strategies in context: An experimental study.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Canberra.

Fuller, R., Chalmers, D., & Kirkpatrick, D. (1995). Teaching university students learning and study strategies in context: An experimental study. *Higher Education Research and Development, 17*, 139-161.

Gagne, R. M. (1985). *The conditions of learning and theory of instruction* (4th ed.). New York: Holt, Rinehart & Winston.

Gallagher, J. J. (1994). Teaching and learning: New models. *Annual Review of Psychology, 45*, 171-195.

Garcia, T., & Pintrich, P. (1995, April). *Assessing students' motivation and learning strategies: The motivated strategies for learning questionnaire.* Paper presented at the Annual Meeting of the American Educational Research *Association*, San Francisco.

Garcia, T., & Pintrich, P. R. (1993, April). *Self-schemas, motivational strategies and self-regulated learning.* Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta.

Garcia, T., & Pintrich, P. R. (1994). Regulating motivation and cognition in the classroom: The role of self-schemas and self-regulatory strategies. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 127-153). Hillsdale: Lawrence Erlbaum Associates.

Gardner, H. W. (1993). Educating for understanding. *The American School Board Journal, July*, 20-24.

Garner, R. (1988). Verbal-report data on cognitive and metacognitive strategies. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp. 63-76). San Diego: Academic Press.

Garner, R. (1990). When children and adults do not use learning strategies: Toward a theory of settings. *Review of Educational Research, 60*(4), 517-529.

Garner, R., & Alexander, P. A. (1989). Metacognition: Answered and unanswered questions. *Educational Psychologist, 24*, 143-158.

Gentile, J. R. (1996). Setbacks in "the advancement of learning?". *Educational Researcher, October*, 37-39.

Ghatala, E. S., Levin, J.R., Pressley, M., & Lodico, M.G (1985). Training cognitive strategy monitoring in children. *American Educational Research Journal, 22*, 199-215.

Gibbs, G. (1981). *Teaching students to learn*. Milton Keynes: Open University Press.

Gibbs, G. (1984). Case study 14: Learning to learn - the student-centred approach. In E. S. Henderson & M. B. Nathenson (Eds.), *Independent learning in higher education* (pp. 274-285). Englewood Cliffs, New Jersey: Educational Technology Publications.

Gibbs, G. (1992). *Improving the quality of student learning*. Bristol: Technical and Educational Services Ltd.

Gibbs, G., & Lucas, L. (1995, September). *Using research to improve student learning in large classes.* 3rd International Improving Student Learning Symposium, Exeter University, England.

Gilles, L. T. (1994). *The assessment of student study skills and learning strategies to prepare teachers for academic advising tasks or the prevalidation of motivated strategies for learning questionnaire (MSLQ), learning and study strategies inventory (LASSI), and test of reactions and adaptation to college (TRAC).* (ERIC Document reproduction Service No. Ed 372 035).

Goodlad, J. I. (1984). *A place called school.* New York: McGraw Hill.

Gow, L., & Kember, D. (1990). Does higher education promote independent learning? *Higher Education, 19*, 307-322.

Hadwin, A. F., & Winne, P. H. (1996). Study strategies have meager support: A review with recommendations for implementation. *Journal of Higher Education, 67*(6), 1-17.

Harackiewicz, J. M., Manderlink, G., & Sansone, C. (1992). Competence processes and achievement motivation: Implications for intrinsic motivation. In A. K. Boggiano & T. S. Pittman (Eds.), *Achievement and motivation. A social-developmental perspective* (pp. 115-137). Cambridge: Cambridge University Press.

Harackiewicz, J. M., & Sansone, C. (1991). Goals and intrinsic motivation: You can get there from here. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (pp. 21-49). Greenwich, Connecticut: JAI Press Inc.

Hattie, J. (1993). Measuring the effects of schooling. *SET, 2*(4), 1-4.

Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of learning skills interventions on student learning: A meta-analysis. *Review of Educational Research, 66*(2), 99-136.

Hayes, J. R., & Flower, L. S. (1986). Writing research and the writer. *American Psychologist, 41*(10), 1106-1113.

Hedges, L., Shymansky, J., A., & Woodworth, G. (1989). *Modern methods of meta-analysis*. Washington: National Science Teachers Association.

Henwood, K., & Nicolson, P. (1995). Qualitative research. *The Psychologist*, 109-110.

Hidi, S., & Anderson, V. (1986). Producing written summaries: Task demands, cognitive operations, and implications for instruction. *Review of Educational Research, 56*(4), 473-493.

Higher Education Council & Glassick, C. (1997). *Scholarship in higher education.* Canberra: Higher Education Council.

Hilgers, L., Bayer, A. S., Stitt-Bergh, M., & Taniguchi, M. (1995). Doing more than 'thinning out the herd': How eighty-two college seniors perceived writing-intensive classes. *Research in the Teaching of English, 29*, 59-87.

Hofmeyer, J., & R., S. (1989). Bridges to the future. *Optima, 14*(1), 37-48.

Humes, A. (1983). Research on the composing process. *Review of Educational Research, 55*(2), 201-216.

Huot (1990). The literature of direct writing assessment: Major concerns and prevailing trends. *Review of Educational Research, 60*(2), 237-263.

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*(6), 1122-1131.

Izard, C. E. (1984). Emotion-cognition relationships and human development. In C. E. Izard, J. Kagan, & R. Zajonic (Eds.), *Emotions, cognitions, and behaviour* (pp. 17-37). New York: Cambridge University Press.

Janssen, P. J. (1996). Studaxology: The expertise students need to be effective in higher education. *Higher Education, 31*, 117-141.

Jegede, O. J., Alaiyemola, F. F., & Okebukola, P. A. O. (1991). *The effect of metacognitive strategy instruction on students' anxiety and achievement in biology.* (ERIC Document Reproduction Service No. Ed 313219).

Jones, C. H., Slate, J. R., & Kyle, A. (1992). Study skills of teacher education students. *Teacher Educator, 2*, 7-15.

Jones, C. J., Bell, S., & Saddler, C. (1991). Helping high school students improve their academic skills: A necessary role for teachers. *High School Journal, 74*, 198-202.

Kaldeway, J., & Korthagen, F. A. J. (1995). Training in studying in higher education: Objectives and effects. *Higher Education, 30*, 81-89.

Karabenick, S. A. (1991). Relationship of academic help seeking to the use of learning strategies and other instrumental achievement behavior in college students. *Journal of Educational Psychology, 83*, 221-230.

Kirby, J. R., & Pedwell, D. (1991). Students' approaches to summarisation. *Educational Psychology, 11*(3,4), 297-307.

Kirkpatrick, D., Chalmers, D., & Fuller, R. (1993). Changes in students' approaches to study. In A. Herrmann & C. Latchem (Eds.), *Teaching Learning Forum* (pp. 251-265). Curtin University of Technology, Perth: Teaching Learning Group.

Kirkpatrick, D., Fuller, R., & Chalmers, D. (1993, November). *But it's harder this way.* Paper presented at the Annual Conference of the Australian Association for Research in Education, Fremantle, Western Australia.

Knapp, J. R., & Karabenick, S. A. (1988). Incidence of formal and informal help-seeking in higher education. *Journal of College Student Development, 29*, 223-227.

Kohn, A. (1993). Rewards versus learning: A response to Paul Chance. *Phi Delta Kappan, 74*, 783-787.

Le Compte, M. D., & Preissle, J. (1993). *Ethnography and qualitative design in educational research* (2nd ed.). San Diego: Academic Press.

Lucas, A. F. (1990). Using psychological models to understand student motivation. *New Directions in Teaching and Learning, 42*, 103-114.

Mahalski, P. A. (1992). Essay-writing: Do study manuals give relevant advice? *Higher Education, 24*, 113-132.

Maltby, F., Gage, N. L., & Berliner, D. C. (1995). *Educational psychology: An Australian and New Zealand perspective*. Brisbane: John Wiley & Sons.

Marsella, J., Hilgers, T. L., & McLaren, C. (1992). *How students handle writing assignments: A study of eighteen responses in six disciplines.* New York: The Modern Language Association of America.

Martin, E., Bowden, J. A., & Ramsden, P. (1989, November). *Students' conceptions of adaptations to higher education.* Paper presented at the Australian Association for Research in Education, Adelaide, Australia.

Martin, E., Bowden, J. A., & Ramsden, P. (1990). *Students' conceptions of adaptations to higher learning.* (Occasional Paper 90.2). Educational Research and Development Unit, RMIT.

Martin, E., & Ramsden, P. (1987). Learning skills, or skill in learning? In J. T. E. Richardson, M. W. Eysenck, & D. W. Piper (Eds.), *Student learning: Research in education and cognitive psychology* (pp. 155-176). Milton Keynes: Open University Press.

Marton, F., Dall'Alba, G., & Beaty, E. (1993). Conceptions of learning. *International Journal of Educational Research, 19*(3), 277-300.

Marton, F., & Saljo, R. (1976). On qualitative differences in learning I: Outcome and process. *British Journal of Educational Psychology, 46*, 4-11.

Marton, F., & Saljo, R. (1984). Approaches to learning. In F. Marton, D. Hounsell, & N. J. Entwistle (Eds.), *The experience of learning* (pp. 36-55). Edinburgh: Scottish Academic Press.

Mathison, S. (1988). Why triangulate? *Educational Researcher, 17*(2),13-17.

Matt, G. E., Pechersky, B., & Cervantes, C. (1991). High school study habits and early college achievement. *Psychological Reports, 69*, 91-96.

May, W. T. (1986). Teaching students how to plan: The dominant models and alternatives. *Journal of Teacher Education, 37*, 6-12.

McCombs, B. L. (1991). Motivation and lifelong learning. *Educational Psychologist, 26*, 117-127.

McCombs, B. L., & Marzano, R. J. (1990). Putting the self back in self-regulated learning: The self as agent in integrating will and skill. *Educational Psychologist, 25*, 51-69.

McCombs, B. L., & Whistler, J. S. (1989). The role of affective variables in autonomous learning. *Educational Psychologist, 24*, 277-306.

McInerney, D. M., & McInerney, V. (1994). *Educational psychology: Constructing learning*. Sydney: Prentice Hall.

McInnis, C., James, R., & McNaught, C. (1995). *First year on campus. A commissioned project of the Committee for the Advancement of University Teaching.* Canberra: Australian Government Publishing Service.

McKeachie, W. J. (1988). The need for study strategy training. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp. 3-9). San Diego, CA: Academic Press.

McKeachie, W. J., Pintrich, P. R., & Lin, Y. (1985). Teaching learning strategies. *Educational Psychologist, 20*, 153-160.

McKeachie, W. J., Pintrich, P. R., Lin, Y., & Smith, D. A. F. (1986). *Teaching and learning in the college classroom. A review of the research literature.* (Technical report No. 86-B-001.0). National Centre for Research to Improve Postsecondary Teaching and Learning, University of Michigan.

McKeachie, W. J., Pintrich, P. R., Lin, Y., & Smith, D. A. F. (1987). *Teaching and learning in the college classroom: A review of the research literature. November 1987 supplement.* (Technical report No. 87-B-001.0). National Centre for Research to Improve Postsecondary Teaching and Learning, University of Michigan.

McLeod, D. B. (1992). Research on affect in mathematics education: A reconceptualization. In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 575-596). New York: Macmillan.

Meece, J. L. (1991). The classroom context and students' motivational goals. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (pp. 261-285). Greenwich, Connecticut: JAI Press Inc.

Meece, J. L. (1994). The role of motivation in self-regulated learning. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance* (pp. 25-44). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Merriam, S. B. (1988). *Case study research in education: A qualitative approach.* San Francisco: Jossey-Bass.

Meyer, J. H. F., & Muller, M. W. (1990). Evaluating the quality of student learning. I - an unfolding analysis of the association between perceptions of learning context and approaches to studying at an individual level. *Studies in Higher Education, 15*(2), 131-154.

Miles, C. (1988). Cognitive learning strategies: implications for college practice. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: issues in assessment, instruction, and evaluation* (pp. 333-347). San Diego: Academic Press.

Moely, B. E., Hart, S. S., Santulli, K., Leal, L., Johnson, T., Rao, N., & Burney, L. (1986). How do teachers teach memory skills? *Educational Psychologist, 21*, 55-72.

Morgan, A. R. (1995, September). *Students' experience of learning: Research and practice.* Paper presented at the 3rd International Symposium: Improving Student Learning Symposium, Exeter University, England.

Murray-Harvey, R. (1996, July). *Defining tertiary students' metacognitive capability.* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Perth, WA.

Naveh-Benjamin, M., McKeachie, W. J., & Lin, Y. G. (1987). Test anxiety: Effects of improving study habits and systematic desensitization. *Journal of Educational Psychology*, *79*(2), 131-136.

Nickerson, R. S. (1988). On improving thinking through instruction. In E. Z. Rothkopf (Ed.), *Review of research in education* (pp. 3-57). Washington, DC: American Educational Research Association.

Nicoll, B. (1993). *Critical thinking: Developing a critical thinking environment for child development studies.* Paper presented at the National Association for the Education of Young Children Conference, La Verne.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*, 231-259.

Nist, S. L., & Simpson, M. L. (1990). The effects of PLAE upon students' test performance and metacognitive awareness. *The Yearbook of the National Reading Conference*, *39*, 321-327.

Nist, S. L., Simpson, M. L., Olejnik, S., & Mealey, D. L. (1991). The relation between self-selected study processes and test performance. *American Educational Research Journal*, *28*(4), 849-874.

NUD•IST, Q. S. R. (1994). *Q.S.R. NUD.IST User guide*. Melbourne: Qualitative Solutions and Research Pty Ltd.

Palincsar, A. S. (1986). Meatcognitive strategy instruction. *Exceptional Children*, *53*, 118-124.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition & Instruction*, *1*, 117-175.

Parer, M., & Benson, R. (1990, July). *Behaviourism, metacognition and phenomenography: is there a meeting point?* Paper presented at Annual Conference of the Higher Education Research and Development Society of Australasia, Melbourne.

Paris, S. C., & Winograd, P. (1990). How metacognition can promote academic learning and instruction. In B. F. Jones & L. Idol (Eds.), *Dimensions of thinking and cognitive instruction* (pp. 15-51). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983). Becoming a strategic reader. *Contemporary Educational Psychology*, *13*, 293-316.

Parsons, P. G., & Meyer, J. H. F. (1990). The academically 'at risk' student: A pilot intervention programme and its observed effects on learning outcomes. *Higher Education*, *20*, 323-334.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students*. San Francisco: Jossey-Bass.

Perkins, D., & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher, 18*, 16-25.

Piaget, J. (1977). *The development of thought: Equilibrium of cognitive structures.* New York: Viking Press.

Pintrich, P. R. (1985). *Anxiety, motivated strategies and student learning*. Paper presented at the International Congress of Applied Psychology, Jerusalem, Israel.

Pintrich, P. R. (1988). A process-oriented view of student motivation and cognition. In J. S. Stark & A. Mets (Eds.), *Improving teaching and learning through research* (pp. 65-79). San Francisco: Jossey-Bass.

Pintrich, P. R. (1989). The dynamic interplay of student motivation and cognition in the College classroom. *Advances in Motivation and Achievement: Motivation Enhancing environments, 6*, 117-160.

Pintrich, P. R. (1991). Editor's comment. *Educational Psychologist, 26*(3 & 4), 199-205.

Pintrich, P. R. (1994). Continuities and discontinuities: Future directions for research in educational psychology. *Educational Psychologist, 29*(3), 137-148.

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33-40.

Pintrich, P. R., De Groot, E. V., & Garcia, T. (1992, August). *Student motivation and self-regulated learning in different classroom contexts.* Paper presented at the XXV International Congress of Psychology, Brussels, Belgium.

Pintrich, P. R., & Johnson, G. R. (1990). Assessing and improving students' learning strategies. In M. D. Svinicki (Eds.), *New directions for teaching and learning: The changing face of college teaching* (pp. 83-91). San Francisco: Jossey-Bass.

Pintrich, P. R., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in classroom academic tasks. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 149-183). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ).* Ann Arbor: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan.

Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement, 53*, 801-813.

Pressley, M., Goodchild, F., Fleet, J., Zajchowski, R., & Evans, E. D. (1989). The challenges of classroom strategy instruction. *The Elementary School Journal, 89*(3), 301-342.

Pressley, P., Woloshyn, V., Lysynchuk, L. M., Martin, V., Wood, E., & Willoughby, T. (1990). A primer for research on cognitive strategy instruction: the important issues and how to address them. *Educational Psychology Review, 2*, 1-58.

Radloff, A. (1994). Writing to learn, learning to write: Helping academic staff to support student writing in their discipline. In C. Troskie & C. Kapp (Eds.), *Staff and Student Development in a Multicultural Setting, Proceedings of the Thirteenth International Seminar on Staff and Educational Development* (pp. 93-100). Cape Town, South Africa: Stellenbosch: Bureau of University and Continuing Education.

Radloff, A. (1997) *A longitudinal study of self-regulation of learning in adult university students*. Unpublished doctoral dissertation, Murdoch University, Western Australia.

Radloff, A., & Samson, J. (1990). Literacy and open learning. In R. Atkinson & C. McBeath (Eds.), *Opening Learning and new technology* (pp. 283-289). Perth, WA: Australian Society for Educational Technology, WA Chapter.

Radloff, A., & Samson, J. (1994). *Writing to learn, learning to write: Assisting students to become 'discipline literate' using a team teaching writing program*. WA CAUT Workshop, Perth, Western Australia.

Ramsden, P. (1987). Improving teaching and learning in higher education: The case for a relational perspective. *Studies in Higher Education, 12*, 275-286.

Ramsden, P. (1988). Context and strategy: Situational influences on learning. In R. R. Schmeck (Ed.), *Learning strategies and learning styles* (pp. 159-184). New York: Plenum Press.

Ramsden, P. (1992). *Learning to teach in higher education*. London: Routledge.

Ramsden, P., Beswick, D., & Bowden, J. (1986). Effects of learning skills interventions on first year university students' learning. *Human Learning, 5*(15), 151-164.

Ramsden, P., Beswick, D., & Bowden, J. (1987). Learning processes and learning skills. In J. T. E. Richardson, M. W. Eysenck, & D. W. Piper (Eds.), *Student learning: Research in education and cognitive psychology* (pp. 168-176). Milton Keynes: Open University Press.

Ramsden, P., Margetson, P., Martin, E., & Clarke, S. (1995). *Recognising and rewarding good teaching in Australian higher education.* A report commissioned by the Committee for the Advancement of University Teaching. Final Report. CAUT.

Ramsden, P., Martin, E., & Bowden, J. (1989). School environment and sixth form pupils' approaches to learning. *British Journal of Educational Psychology, 59*, 129-142.

Richards, T., & Richards, L. (1995a). Using computers in qualitative analysis. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 1-36). Newbury Park: Sage.

Richards, T., & Richards, L. (1995b). Using hierarchical categories in qualitative data analysis. In U. Kelle (Eds.), *Computer-aided qualitative data analysis: Theory methods and practice* London: Sage.

Richardson, J. T. E. (1994). Cultural specificity of approaches to studying in higher education: A literature survey. *Higher Education, 27*, 449-468.

Romainville, M. (1994). Awareness of cognitive strategies: the relationship between university students' metacognition and their performance. *Studies in Higher Education, 19*(3), 359-366.

Rothkopf, E. Z. (1988). Perspectives on study skill training in a realistic instructional economy. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction and evaluation* (pp. 275-286). San Diego: Academic Press.

Rouse, A., & Dick, M. (1995). Using computerized tools for qualitative studies in information systems: Two case studies. *The Australian Journal of Social Research, 1*(1), 101-117.

Samson, J. (1996) *An investigation of the literacy skills of teacher education students and the development and implementation of a writing intervention program.* Unpublished doctoral dissertation, Curtin University of Technology, Perth, Western Australia.

Samson, J., & Radloff, A. (1992). *In writing. A guide to writing effectively at the tertiary level.* Perth, WA: Paradigm Press.

Samson, J., & Radloff, A. (1993, February). *Writing to learn, learning to write: Helping your students become 'discipline literate'.* Paper presented at The Teaching and Learning Forum '93: Sharing quality practice, Teaching Learning Group, Curtin University of Technology, Bentley, WA.

Schmeck, R. B. (1988). Individual differences and learning strategies. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp. 171-191). New York: Academic Press.

Schmeck, R. R. (1983). Learning styles of College students. In R. F. Dillon & R. R. Schmeck (Eds.), *Individual differences in cognition* (pp. 233-279). New York: Academic Press.

Schneider, W., & Pressley, M. (1989). *Memory development between 2 and 20*. New York: Springer Verlag.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.

Schumaker, J. B., & Deschler, D. D. (Ed.). (1992). *Validation of learning strategy interventions for students with learning disabilities: Results of a programmatic research effort*. New York: Springer-Verlag.

Schunk, D. H. (1990). Goal setting and self-efficacy during self-regulated learning. *Educational Psychologist, 25*, 71-86.

Schunk, D. H. (1991). Goal setting and self-evaluation: A social cognitive perspective on self-regulation. *Advances in Motivation and Achievement, 7*, 85-113.

Schunk, D. H. (1993, April). *Enhancing strategy use: Influences of strategy value and goal orientation.* Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta.

Schunk, D. H., & Zimmerman, B. J. (1994). Self-regulation in education: Retrospect and prospect. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 305-314). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Scouller, K. (1998). The influence of assessment method on students' learning approaches: Multiple choice question examination versus assignment essay. *Higher Education, 35*, 453-472.

Scouller, K. M., & Prosser, M. (1994). Students' experiences in studying for multiple choice question examinations. *Studies in Higher Education, 19*(3), 267-279.

Sharwood, D. W. (1996, July). *How can students be encouraged to follow successful study strategies?* Paper presented at the Annual Conference of the Higher Education Research and Development Society of Australasia, Perth, Western Australia.

Shaver, J. P. (1996). What statistical significance testing is, and what it is not. *Journal of Experimental Education, 61*(4), 293-316.

Sherman, T. M. (1985). Learning improvement programs: A review of controllable influences. *Journal of Higher Education, 56*(1), 85-100.

Shuell, T. J. (1986). Cognitive conceptions of learning. *Review of Educational Research, 56*, 411-436.

Shuell, T. J. (1990). Phases of meaningful learning. *Review of Educational Research, 60*(4), 531-547.

Shulman, L. S. (1986). Paradigms and research programs in the study of teaching: A contemporary perspective. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.) (pp. 3-36). New York: Macmillan.

Shulman, L. S. (1988). Disciplines of inquiry in education: An overview. In R. M. Jaeger (Ed.), *Complementary methods for research in education* (pp. 3-20). Washington: AERA.

Snow, R. E. (1974). Representative and quasi-representative designs for research on teaching. *Review of Educational Research, 44*, 265-291.

Solas, J. (1992). Investigating teacher and student thinking about the process of teaching and learning using autobiography and repertory grid. *Review of Educational Research, 62*(2), 205-225.

Spielberger, C. D. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press Inc.

SPSS 6.0 [software]. (1993). Chicago, Illinois: SPSS Inc.

Stake, R. E. (1988). Case study methods in educational research: Seeking sweet water. In R. M. Jaeger (Ed.), *Complementary methods for research in education* (pp. 253-265). Washington, DC: American Educational Research Association.

Tait, H., & Entwistle, N. (1996). Identifying students at risk through ineffective study strategies. *Higher Education, 31*, 97-116.

Tang, K. C. C. (1992). Perceptions of task demand, strategy attributions and student learning. *Research and Development in Higher Education, 15*, 474-481.

Tatsuoka, M. (1993). Effect size. In G. Keren & C. Lewis (Eds.), *A handbook for data analysis in the Behavioral Sciences: methodological issues* (pp. 461-479). Hillsdale: Lawrence Erlbaum Associates.

Thomas, E. L., & Robinson, H. A. (1972). *Improving reading in every class: A sourcebook for teachers*. Boston: Allyn and Bacon.

Thomas, J. W. (1988). Proficiency at academic studying. *Contemporary Educational Psychology, 13*, 265-275.

Thomas, J. W., Bol, L., & Warkentin, R. W. (1991). Antecedents of college students' study deficiencies: The relationship between course features and students' study activities. *Higher Education, 22*, 275-296.

Thomas, J. W., & Rohwer, W. D. J. (1993). Proficient autonomous learning: Problems and prospects. In M. Rabinowitz (Ed.), *Cognitive science foundations of instruction* (pp. 1-31). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Thomas, P. R., & Rohwer, W. D. J. (1986). Academic studying: The role of learning strategies. *Educational Psychologist, 21*(1 &2), 19-41.

Thornton, N. E., Bohlmeyer, E. M., Dickson, L. A., & Kulhavy, R. W. (1990). Spontaneous and imposed study tactics in learning prose. *Journal of Experimental Education, 58*, 111-124.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: University of Chicago Press.

Tobias, S. (1985). Test anxiety: Interference, defective skills, and cognitive capacity. *Educational Psychologist, 20*(3), 135-142.

Trigwell, K., & Prosser, M. (1991a). Improving the quality of student learning: the influence of learning context and student approaches to learning on learning outcomes. *Higher Education, 22*, 251-266.

Trigwell, K., & Prosser, M. (1991b). Relating approaches to study and quality of learning outcomes at the course level. *British Journal of Educational Psychology, 61*, 265-275.

van Overwalle, F. (1989). Success and failure of freshman at university: A search for determinants. *Higher Education, 18*, 287-308.

van Rossum, E. J., Deijkers, R., & Hamer, R. (1985). Students' learning conceptions and their interpretation of significant educational concepts. *Higher Education, 14*, 617-641.

van Rossum, E. J., & Schenk, S. M. (1984). The relationship between learning conception, study strategy and learning outcome. *British Journal of Educational Psychology, 54*, 73-83.

Vermunt, J. D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: A phenomenographic analysis. *Higher Education, 31*, 25-50.

Volet, S. (1995). Process-oriented instruction: A discussion. *European Journal of Psychology of Education*.

Volet, S. E. (1991). Modelling and coaching of relevant metacognitive strategies for enhancing university students' learning. *Learning and Instruction, 1*, 319-336.

Volet, S. E., & Lawrence, J. A. (1990). Goals in the adaptive learning of university students. In H. Mandl, E. de Corte, N. Bennett, & H. F. Friedrich (Eds.), *Learning and instruction* (pp. 497-516). Oxford: Pergamon Press.

Volet, S. E., & Styles, I. M. (1992). Predictors of study management and performance on a first-year computer course: The significance of students' study goals and perceptions. *Journal of Educational Computing Research, 8*(4), 423-449

Wang, M. C., & Palincsar, A. S. (1989). Teaching students to assume an active role in their learning. In M. C. Reynolds (Ed.), *Knowledge base for the beginning teacher* (pp. 71-84). Oxford: Pergamon Press.

Watkins, D. (1982). Factors influencing the study methods of Australian tertiary students. *Higher Education, 11*, 369-380.

Watkins, D., & Hattie, J. (1985). A longitudinal study of the approaches to learning of Australian tertiary students. *Human Learning, 4*, 127-141.

Weinstein, C. (1982). Learning strategies: The metacurriculum. *Journal of Developmental & Remedial Education, 5*, 6-10.

Weinstein, C. (1987). Fostering learning autonomy through the use of learning strategies. *Journal of Reading, 30*(7), 590-595.

Weinstein, C. E. (1988). Assessment and training of student learning strategies. In R. R. Schmeck (Ed.), *Learning strategies and learning styles* (pp. 291-315). New York: Plenum Press.

Weinstein, C. E., Hagen, A. S., & Meyer, D. K. (1992, August). *Students' attributions and performance in a program combining strategy instruction, goal using, and executive control.* Paper presented at the XXV International Congress of Psychology, Brussels, Belgium.

Weinstein, C. E., & Mayer, R. E. (1986). The teaching of learning strategies. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 315-327). New York: Macmillan.

Weinstein, C. E., Zimmerman, S. A., & Palmer, D. R. (1988). Assessing learning strategies: The design and development of the LASSI. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: issues in assessment, instruction, and evaluation* (pp. 25-40). San Diego: Academic Press.

Weinstein, R. S. (1989). Classroom perceptions and student motivation. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (pp. 187-221). San Diego: Academic Press.

Weitzman, E. A., & Miles, M. B. (1995). *Computer programs for qualitative data analysis*. London: SAGE Publications.

Westman, A. S., & Lewandowski, L. M. (1991). Presentation does not guarantee recall: Students need to learn study habits. *Perceptual and Motor Skills, 72*, 1316-1318.

White, R., & Gunstone, R. (1992). *Probing understanding*. London: Falmer Press.

Willis, D. (1993). Academic involvement at university. *Higher Education, 25*, 133-150.

Willoughby, T., Wood, E., & Khan, M. (1994). Isolating variables that impact on or detract from the effectiveness of elaboration strategies. *Journal of Educational Psychology, 86*(2), 279-289.

Wilson, J. E. (1988). Implications of learning strategy research and training: what it has to say to the practitioner. In C. E. Weinstein, E. T. Goetz, & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation* (pp. 323-331). San Diego: Academic Press.

Wittrock, M. C. (1986). Students' thought processes. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 297-314). New York: Macmillan Publishing Company.

Woolfolk, A. E. (1995). *Educational psychology* (6th ed.). Sydney: Allyn and Bacon.

Worrell, P. J. (1990). Metacognition: Implications for instruction in nursing education. *Journal of Nursing Education, 29*(4), 170-175.

Zimmerman, B. J. (1986). Becoming a self-regulated learner: Which are the key subprocesses? *Contemporary Educational Psychology, 11*, 307-313.

Zimmerman, B. J. (1989a). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement* (pp. 1-25). New York: Springer Verlag.

Zimmerman, B. J. (1989b). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*, 329-339.

Zimmerman, B. J. (1990). Self-regulating academic learning and achievement: The emergence of a social cognitive perspective. *Educational Psychology Review, 2*(2), 173-201.

Zimmerman, B. J. (1994). Dimensions of academic self-regulation: A conceptual framework for education. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance. Issues and educational applications* (pp. 3-21). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Zimmerman, B. J., Greenberg, D., & Weinstein, C. E. (1994). Self-regulating academic study time: A strategic approach. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance. Issues and educational applications* (pp. 181-199). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Zimmerman, b. J., & Martinez-Pons, M. (1992). Perceptions of efficacy and strategy use in the self-regulation of learning. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 185-207). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Zimmerman, B. J., & Pons, M. M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal, 23*, 614-628.

Zimmerman, B. J., & Schunk, D. H. (Eds.). (1989). *Self-regulated learning and academic achievement*. New York: Springer Verlag.

Zuckerman, M. (1960). The development of an affect adjective checklist for the measurement of anxiety. *Journal of Consulting Psychology, 24*, 457-462.

Appendices

Appendix 3.1

Feedback on Ed 101 Draft Essay (Theoretical Background)

NOTE:
When reviewing your assignment please use the following key. Numbers are placed in the margins or body of your assignment

(If you have submitted a contents page the following applies. You did not have to submit a contents page this time. However, you must remember to include a contents page when you submit your final report.)

1. Contents page

1.1 Numbers and/or headings do not match those in the main body
1.2 Please check that page numbers match those used in main body
1.3 Please check headings used match main body
1.4 Please expand to include the major sub-headings used in your assignment
1.5 Place references / appendix last please
1.6 Layout is not clear and / or easy to read
1.7 See *The Essay* p. 6, please

2. Theoretical background

2.1 Introduction

2.1.1 Please include an opening sentence
2.1.2 Please include a statement of main thesis
2.1.3 Simply list the main areas / issues to be covered
2.1.4 Issues should not be discussed / expanded on in the introduction
2.1.5 The introduction is hard to identify
2.1.6 Please do not waste words on Piaget's personal details, they do not underpin your discussion!!

2.2 Main body

2.2.1 Are the Issues linked to the topic?
2.2.2 Please check that the issues follow the pattern set in the introduction
2.2.3 Please check all the main issues are covered
2.2.4 Less emphasis on the stages please
2.2.5 Please make sure the issues link and flow
2.2.6 Greater synthesis of ideas presented is needed
2.2.7 Reference all authors' ideas please
2.2.8 Please check content is correct

2.3 Conclusion

2.3.1 Please do not include new issues in the conclusion
2.3.2 Synthesis of ideas please / reinforce points presented
2.3.3 Work on / include a final sentence

3. General

3.1 Check your format and structure
3.2 You have relied too heavily on your own text
3.3 The class activity should not be discussed in the essay
3.4 Read aloud please
3.5 Say what you mean clearly
3.6 Please check your sentence construction
3.7 Please write 'about' ideas and not 'to' the reader. Write in the third person
3.8 Check how to reference when paraphrasing
3.9 Check how to reference when using the exact words of the author
3.10 Check reference list format
3.11 Please use headings
3.12 Please edit your work
3.13 Please work on your presentation eg folder, headings, neatness

Appendix 3.2

CURTIN UNIVERSITY OF TECHNOLOGY
FACULTY OF EDUCATION

How to do well at University

General information:

1. **Tertiary studies are not all that different from those at secondary school.** You will however, only have direct contact with your lecturers for about 3 hours per week. Consequently it is difficult for the lecturers to get to know you personally, so make yourself known!! In the Faculty of Education we try to get to know all students in the tutorial sessions.

2. University instructors will provide you with information , lectures etc but **you are largely responsible for your own performance.** Unlike high school, nobody will chase you up if you have not handed in your assignments and lab reports on time. Research on pass rates show that successful students are those who have learnt to be responsible for their own education. No-one can learn for you. It is up to you.

3. **Nobody will chase you up to check whether you have been studying.** University courses are not easy but **with feedback and persistent regular effort you can succeed.**

4. **Do all the compulsory work and hand it in on time.** Every year there are students who score above 50% yet fail the course by not meeting all the requirements eg skipping tutorials or not handing in required work.

5. You are expected to take responsibility for your own education but academic staff are there to assist you in this endeavour, use their help!! **Please ask before you have too many problems.**

6. Education Psychology, like learning a language, a musical instrument or running a marathon, **cannot be done the night before the exam.** Education psychology can only be learnt by regular and consistent effort both in studying the theory and in practising problems. **Work conscientiously throughout the semester**

In class:

7. **You are, or will be, paying for your education so make sure you get value for your money.** That means amongst other things, insisting that you can hear the lecturer, ie tell noisy students around you to 'shut-up'! Sit in the front row to hear and see the lecturer without distractions.

8. **Attend all classes and lectures.** Make sure you get something out of them!!

9. Try to find a happy medium between listening to lectures and copying down everything said. **Make notes from texts or other references** in your own time. **Elaborate notes** taken in class.

10 **Ask questions if you do not understand.** Your classmates will be grateful!!

Out of class:

11. **Carefully read the course outlines, especially the assessment conditions.** Make sure you understand what is required in the unit.
Think of the unit outline as a contract between you and the Faculty. Please do not break the contract, by not completing all course requirements.

12. **Peer group learning.** A very good way to know if you really understand a topic / concept is to try and explain it to someone else. Get together with other students and work through the study guide questions.

13 **Prepare for lectures by reading ahead.** You will be amazed at how much more you understand what the lecturer is on about!!

14. **Try to read material from more than one text or reference.** The more points of view you get the better.

15. Make sure you **learn how to find information in the library.** There are different methods for finding information in books and journals, learn both!!

16. **Professionals typically work 50 to 60 hours per week**. You should be doing the same.

General hints:

17. **Establish a study routine straight away;** early study will make for less stress later.

18. **Do not fall behind; it is very hard to catch up.**

19. **Meet deadlines** ie hand work in on time. If you are unable to meet the deadlines, negotiate with the lecturer early, do not run away and hide!!

20. **Seek help early.**

21. **Set realistic goals** for yourself. Reward yourself when you achieve what you set for yourself!

22. **Plan, monitor and evaluate your learning.** Keep what is working for you change, what is not.

23. By the time you leave University, **you should have learnt not only facts but how to think logically and analytically.** Instead of learning only "the facts" you will learn how to learn. That is, you will be empowered by knowing how to discover information for yourself and how to solve problems.

Note:

If you need more help with any matters affecting your ability to study effectively - including study skills, financial problems, stress, personal and /or relationship problems or career choice, **why not talk it over with your mentor or visit your friendly campus counselling service.**

Adapted by B de la Harpe from 'Science Study Skills 101', a handout by Dr M Zadnik, Applied Physics, Curtin.

Education 101: Growth and Development
Semester 1, 1995

Tasks to be completed:

tick when completed

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

..... ☐

How to study for exams

For the results of a test to be a true reflection of what learning has occurred, students should be shown how to study as well as how to prepare and take a test. It is remarkable how many students have learned how to prepare and take a test only by a process of trial and error.

Before the exam:

Plan an exam study timetable:
Allow sufficient time to revise for exams as well as completing your normal 'during semester work'. Make it realistic not overly optimistic! Increase your workload up to the day before the exam (but studying right up to several hours before the exam is not advisable).

Find out what type of test the lecturer will give and study the material with that in mind.

Make sure you have the necessary knowledge to understand new information:
- Keep definitions of key vocabulary available as you study.
- Review required facts and concepts before attempting new material.

Study the right information in the right way:
- Be sure you know exactly what topics and readings you will be expected to master.
- Make sure you are familiar with the organisation of the materials to be learned.
- Preview headings, introductions and summaries.
- Spend time on important, difficult and unfamiliar material that will be required for the test.
- Keep a list of the parts of the text that give you trouble and spend more time on those pages.
- Process the important information thoroughly by using mnemonics, forming images, creating examples, answering questions, making notes in your own words and elaborating the text. Do not try to memorise the author's words -use your own!
- For multiple choice use mnemonics to remember definitions of key terms
- If you have not being reviewing and summarising the material periodically you will be forced to "cram".
- Trying to memorise too much detail in a short time can lead to a failure to remember any of it well.

Practise doing example questions from your study guide under exam conditions. Like most things practice with corrective feedback makes perfect, plus it reduces some of the stress through knowing what to expect. If you are practising doing exams, don't get distracted!!

Monitor your own comprehension:

- Use questioning to check your understanding.
- When reading speed slows down, decide if the information in the passage is important. If it is, note the problem so you can re-read or get help to understand.
- Check your understanding by working with a friend and quizzing each other.

Evaluate: Know your own cognitive skills and use them deliberately:

- Use examples and analogies to relate new material to something you care about and understand well.
- If one study technique is not working try another, the goal is to be active and stay involved (See Woolfolk (1993) p 266 - 272).
- Remember trying a new strategy will be more time-consuming at first, but once mastered, "Oh what a feeling!!"

Seek help from the lecturer or tutor early. You will not endear yourself by asking the lecturer questions about the course the day before the exam.

Use a reward system:
Do not wear yourself to a frazzle during your revision period. Allow yourself some time for relaxation, and the things you enjoy doing otherwise you will be too mentally exhausted to use your knowledge.

Routines:
Keep a reasonable routine of study, relaxation, exercise, food and sleep.

Anxiety:
Despite good preparation and good exam technique, some students have great problems with exam anxiety. There are techniques that can help overcome this. If panic arises talk positively to yourself and take a few deep breaths and hold them for a short count. If you believe that being anxious gets in the way, see the campus counsellors they will be able to help.

Source: Adapted from "How to Study for and Pass Exams" by M.G. Zadnik (1992), Applied Physics, Curtin, Tonjes, M.J., & Zintz, M.V. (1983). *Teaching reading/thinking/study skills in content classrooms.* Iowa: Wm. C. Brown Company Publishers, and Woolfolk, A.E. (1993). *Educational Psychology.* Sydney: Allyn and Bacon.

How to take tests / exams

During the test / exam:

Doing well on University tests requires diligent effort, but it is possible to increase your chances of getting higher marks on tests by sharpening your test taking-skills. Test taking skills are important because most university assessments include some test scores.

Here are some test-taking strategies:

Reduce your test anxiety:

- Most anxiety results from fear, and the best way to reduce fear is to be well prepared.
- When feeling anxious, breathe deeply and think "cool blue ocean....!!"

Preview tests:

- Determine exactly what is being asked of you, by reading the directions carefully.
- Determine the type of questions, whether you need to answer all the questions, whether all are of equal value, whether the test items are on one or both sides of the pages, and whether you should answer on the test sheet or an answer sheet.
- Obey all instructions!! Students who do not read the directions carefully lose unnecessary marks.

Plan:

- Time is usually limited during exams/tests, so careful planning is required.
- Determine how many questions you must answer, how many marks each question is worth, and how much time you have to answer each question. Bring your own watch to class.
- There is usually a 10 minute reading time, use this time to carefully read the questions, to calculate the time per question and the order in which you will answer them.

PS: This might seem much too obvious a point, but it is amazing how many students will agonise over initial questions, leaving little or no time to answer all the questions adequately!!

Answer the easiest questions first:

- Answer questions you feel comfortable with, leaving a small mark next to questions you need to return to. This will build up your confidence!!
- Answering easy questions first is good strategy for several reasons;
  your time is valuable and so if time runs out you have answered all the questions you were relatively certain about,
  during the test you may think of the answers to the difficult questions, and
  you may find the answers to the difficult questions in other questions in the test!!
- Do not "freeze" when confronted with a question you think you do not know the answer to simply move on, otherwise you will waste precious time!!

Answer all questions:

- Unless you are told that incorrect answers will be deducted from the correct percentage, guess.
- If none of the answers seems exactly correct, pick the one that is closest to what you believe to be correct.

Monitor:

- Check answers carefully.
- If time permits, review your answers.
- On multiple choice questions, a good rule of thumb is NOT to change an answer unless you are certain that your change is correct. Statistics indicate that the first hunch is usually better than the second guess!!
- Don't be a yahoo and leave in a flurry letting others know how smart you are!! Relax and use all the available time to the fullest.

Do not share answers:

- Copying from others is a serious infraction that can result in failure or even dismissal from the University.

Evaluate:

- Learn from incorrect responses.
- Test taking is a skill, and you learn from your mistakes.
- Analyse how you went, analyse your mistakes to determine why you made a mistake, and then make the proper adjustments.
- Talk over an exam or test with your lecturer if you are unable to work out where and why you went wrong.

After the test / exam:

- Avoid lengthy discussions with peers about the answers to the exam questions. You may become unduly concerned about your answers which may reduce your confidence and performance in other exams.

Source: Adapted from; Scappaticci, F.T. (1991). *Educational psychology study guide.* Boston: Houghton Mifflin., Shepherd, J. (1987). *College study skills.* Boston: Houghton Mifflin, and "How to Study for and Pass Exams" a handout prepared by M.G. Zadnik (1992), Applied Physics, Curtin.

Appendix 3.5

My Perceptions During the Semester

Date:	Date:	Date:	Date:
Words selected	Words selected	Words selected	Words selected

Degree of "worry"

100						
90						
80						
70						
60						
50						
40						
30						
20						
10						
0						
Date						

Degree of "confidence"

100						
90						
80						
70						
60						
50						
40						
30						
20						
10						
0						
Date						

How I feel:

Date:		**Date:**		**Date:**		**Date:**	
lecture		lecture		lecture		lecture	
tutorial		tutorial		tutorial		tutorial	
assign.		assign.		assign.		assign.	
read		read		read		read	
study		study		study		study	

Appendix 3.6

Weekly implementation details of the Learning Support Program in Semester 1, 1995, including date, Ed101 topic, learning support and administration of questionnaires.

Assisting first year students become efficient learners: Timetable Semester 1, 1995.			
Week	**Date/Topic**	**Learning Support**	
1	20 Feb Introduction	**Goals:** **Planning**: **Awareness:** **Q're:**	Value of and setting goal for next week Calendar and weekly timetable Poster of teaching - learning process Pintrich and State Trait Questionnaires
2	27 Feb Project Preparation	**Goals:** **Planning:** **Awareness:** **Reading:** **Writing:**	Monitoring, rewarding and setting Revising calendar and timetable Being successful at university Planning, monitoring and evaluating W.D.I.L.T? PQ4R Project and draft essay Model essay outline, practice
3	07 Mar Cognitive Development	**Goals:** **Awareness:** **Writing:**	Monitoring, rewarding and setting Adapting study schemes, Planning, monitoring and evaluating study Positive self-talk W.D.I.L.T? Discuss project's method procedure Collect draft essay
4	14 Mar Project preparation	**Goals:** **Awareness:** **Reading:** **Writing**	Monitoring, rewarding and setting Study strategy: Read, underline and Summary for homework W.D.I.L.T? Student representative Revise PQ4R 5-by-3, Think , Preplan and Plan Model essay plan, Monitoring errors in draft essay Practice exercise (using own essay) Practice exercise (article from book)

5	Mar 21 Language	**Goals:** **Awareness:** **Q're:**	Types of goals, value of goals, monitoring, rewarding and setting Study strategy: check summaries, reward Homework: elaborate summary, prepare outline, keywords, concept map Prompt to plan and be organised Bingo Zuckerman q're and recording of results
6	Mar 28 Project prep	**Goals:** **Awareness:** **Writing:**	Monitoring, rewarding and setting Study strategy: check elaborated summary, outline, keywords, or concept map, reward Monitor, discuss learning strategy for test Give students feedback and discuss strategy 5-by-3, Think , Preplan, Plan and Compose Model contents page, project structure Practice exercise, contents page Practice contents page using own essay Practice composing using own essay Evaluate own writing problems, discuss tips
7	04 April Social Development	**Goals:** **Awareness:** **Q're:**	Monitoring, rewarding and setting Managing test taking anxiety breathing, positive self-talk, being prepared Value of planning and outlining Monitor and evaluate learning strategy Outlining exercise from text Study strategy: homework summary, outline, keywords, or concept map Zuckerman q're and recording of results
8	10 April Physical Development	**Goals:** **Awareness:**	Monitoring, rewarding and setting Study strategy: check summary, outline, keywords, or concept map, reward Managing test taking anxiety breathing, positive self-talk, being prepared Learning strategy: study skills and learning strategies (rehearsal, elaboration, organisation, metacognition) and suggestions Summarising and outlining text exercise Reciprocal teaching exercise W.D.I.L.T?
9	17 April	Easter Week Free	

10	25 April Project Preparation	**Goals:** **Awareness:** **Writing:** **Q're:**	Setting Planning, semester calendar and lists Learning strategy: summaries of text Action plan Homework: analyse project feedback, strategies used, using feedback key Use 5-by-3 to conduct next project, Think , Preplan, Plan, Compose, Review: Practice exercise Editing handout Presentation of work handout Evaluate: Discuss feelings and strategies Zuckerman q're and recording of results
11	02 May Intelligence	**Goals:** **Awareness:**	Monitoring, rewarding and setting
12	09 May	No workshop: Teaching Practice	
13	16 May Special Needs	**Goals:** **Awareness:** **Q're:**	Monitoring, rewarding and setting How to study for exams Plan, monitor evaluate study strategy Students discuss project 2 W.D.I.L.T? Zuckerman q're and recording of results
14	23 May Gender	**Goals:** **Awareness:** **Q're:**	Monitoring, rewarding and setting How to take an exam Pintrich and State Trait Questionnaires SAT and SATLS
15	30 May	No Workshop Final Test (multiple choice) **Q're:**	Zuckerman

Appendix 3.7

Examples of Ed101 Growth and development short answer test questions and multiple choice test items

Short Answer Test 1: Language Development

a) Describe the stages in the process of language acquisition and development. (6 marks)

b) Briefly describe three ways that you, the teacher, can encourage language development in your ECE, Primary or Secondary classroom. (3 marks)

Synthesis (1 mark)

Short Answer Test 2: Moral Development

Suggest 6 ways that you the teacher can prevent cheating in your classroom. (6 marks)

Describe what you would do if you were confronted by a student cheating (3 marks)

Synthesis (1 mark)

Short Answer Test 3:

Describe the physical characteristics of the students that you will teach and explain how you can apply your understanding of their physical characteristics to assist your teaching (9 marks)

Synthesis (1 mark)

Examples of the Multiple choice test items
(every 6th item out of total of 60 included below)

6. The role of "private speech" in Vygotsky's view is to:
   a) guide one's activities in solving a problem
   b) satisfy the egocentric needs of children in pre-operational stages
   c) call attention to oneself during play
   d) stimulate the development of language form telegraphic to full sentences

12. Little Ali says "sleep time" to indicate that it is time for her to go to bed. This is an example of:
   a) a holophrase
   b) telegraphic speech
   c) a phoneme
   d) a morpheme

18. If a child fails to resolve a crisis at an early stage, the expectancy would be for the child to:
   a) forget the crisis and progress normally through later stages
   b) resolve the crisis at a later stage
   c) encounter problems with resolutions of later crises
   d) become arrested at that stage until the crisis is resolved

24. Seventeen-year old Carl has considered several career options and has developed a firm career goals. Carl is experiencing identity:
    a) fore closure
    b) moratorium
    c) diffusion
    d) achievement

30. Bobby sees Jennifer copy an answer from another student on a test. Bobby reasons "well, it's okay for her to do that because she got away with it - the teacher wasn't looking." The moral reasoning stage reflected is:
    a) preconventional
    b) conventional
    c) nonconventional
    d) postconventional

36. Primary grade teachers should use books featuring large print because,
    a) young children are attracted to contrasts between small and large objects
    b) young children have difficulty focussing on small print
    c) large print helps hold the children's attention
    d) young children respond better to vivid stimuli

42. What is the typical correlation between IQ and school achievement?
    a) weak negative
    b) about zero
    c) weak positive
    d) moderate to strong positive

48. The theory that defines intelligence as encompassing seven separate kinds of intelligence is:
    a) Guildford's faces of intellect
    b) Spearman's g factor theory
    c) Sternberg's components view of intelligence
    d) Gardner's theory of multiple intelligences

54. When comparing males and females in the area of number ability, in the preschool and early primary years",
    a) no consistent differences are found
    b) females tend to score higher
    c) males tend to score higher
    d) females tend to score lower

60. Which of the following is the most prevalent form of exceptionality seen in the schools?
    a) learning disabilities
    b) communication disorders
    c) behaviour disorders
    d) mental retardation

Appendix 3.8

Interview schedule Semester 1, 1995:

Greetings
Ask student's permission to tape interview

Opening:

Thank participant for agreeing to interview.

Inform participant that:

- the purpose of research is to gain information about first year students' experiences,
- their opinions, perceptions, thoughts and ideas are very valued and much appreciated,
- all data will be confidential and no names will be used.

Although there are some general areas that I wish to cover, student must feel free to mention anything he/she feels is important.

Question 1:

What are your impressions of university after being here for one semester?

Question 2:

a) What should your lecturer do to assist you learn?

b) What would you want them to do to specifically help you?

Question 3:

What sort of teaching strategies do you find help you to learn the subject?
(prompt if necessary: writing, listening, working in small groups, presenting to class, discussing, observing others, debating, case studies, giving notes / handouts, videos, self-study, using o / heads etc, modelling and practice)

Question 4:

Please think back to Ed 101, was anything included that made it different from your other units (other than content)?

Question 5:

a) In Ed 101, for project One (remember Piaget?) you were asked to conduct an experiment and then to write a report outside class time. Can you explain the particular method you used to help you plan and write the report?

Note: If student fails to give an answer use the following probe. "What if you were having difficulty? Is there any particular method you use?"

b) You have mentioned that there are a number of things that you do. I would like you to look at this scale and tell me how often you do each of the things you mentioned each time you have to write a report. (The interviewer recalls each method and the student indicates his / her rating on a scale from 5 = all of the time, 4 = most of the time, 3 = frequently, 2 = occasionally, 1 = seldom)

c) Where did you learn to use that method?

d) How do you feel about your method?

Question 6:

a) In Ed 101 you had to complete three short answer tests? Do you have any particular method for preparing for this type of test?

b) You have mentioned that there are a number of things that you do. I would like you to look at this scale and tell me how often you do each of the things you mentioned. (The interviewer recalls each method and the student indicates his / her rating on a scale from 5 = all of the time, 4 = most of the time, 3 = frequently, 2 = occasionally, 1 = seldom).

c) Where did you learn to use that method?

d) How do you feel about your method?

Question 7:

a) Please think back to the final exam in Ed 101. Can you explain how you went about preparing for the exam?

b) You have mentioned that there are a number of things that you do. I would like you to look at this scale and tell me how often you do each of the things you mentioned when studying for an exam. (The interviewer recalls each method and the student indicates his / her rating on a scale from 5 = all of the time, 4 = most of the time, 3 = frequently, 2 = occasionally, 1 = seldom).

c) Where did you learn to use (interviewer recalls each method) strategy?

d) How do you feel about your method?

Question 8:

Do you ever stop and look back or reflect on your own learning strategies?

Question 9: (Only Barbara de la Harpe's students)

Rate each of the following strategies that were used in Ed 101 on a scale form 1 - 4:
(4 = of great value, 3 = of some value, 2 = of little value, 1 = of no value)

Goal setting _____

Completing the calendars _____

Project preparation sessions _____

5-by-3 writing model _____

Essay draft _____

Numbered feedback sheet _____

PQ4R reading strategy _____

Summaries of the chapters before the tests _____

Discussing how to prepare for a test _____

The handouts 'How to prepare for a test' and 'How to take a test" _____

Discussing anxiety management before the test _____

Being asked "What did I learn today?" _____

Working / discussing in small groups _____

Lecturer focussing on assisting us to learn _____

Appendix 3.9

Perceptions of being a first year student

Objective:

The aim of this questionnaire is to learn about how you are experiencing university. Your thoughts and feelings are very important in understanding first year students' perspectives.

Instructions:

There are no right or wrong responses. Your opinion is what is important. Please complete the questionnaire thoughtfully and honestly. **Your responses will be treated with the utmost confidence.**

Please take a minute or two to focus your thoughts on being at university, then respond to the following: **Please answer all questions.**

1. The words below could describe how you feel about the Ed 101: Growth & Development Unit. Read through the list of words and **CIRCLE** those which describe how you **currently feel about the Ed 101: Growth & Development unit.** You may circle as many or as few words as you wish.

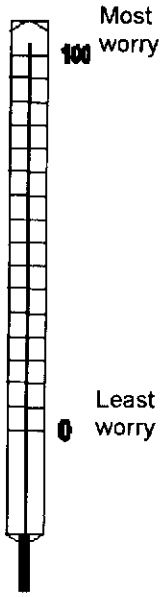
absorbed	afraid	aimless	ambitious	annoyed	aware	bored
calm	careless	cautious	challenged	cheerful	cheated	comfortable
confused	contented	creative	curious	dedicated	desperate	disappointed
efficient	entertained	excited	fearful	fortunate	frightened	happy
hopeless	impatient	incapable	inspired	interested	joyful	lazy
loving	miserable	misplaced	nervous	organised	overloaded	panicky
pleasant	pleased	productive	pushed	refreshed	regretful	rewarded
satisfied	secure	serious	shaky	steady	tense	terrified
thoughtful	upset	weary	worried	Other		

2. The words below could describe how you feel about your course as a whole. Read through the list of words and **CIRCLE** those which describe how you **currently feel about all the units you are enrolled in ie. your course as a whole**. You may circle as many or as few words as you wish.

absorbed	Afraid	aimless	ambitious	annoyed	aware	bored
calm	Careless	cautious	challenged	cheerful	cheated	comfortable
confused	Contented	creative	curious	dedicated	desperate	disappointed
efficient	Entertained	excited	fearful	fortunate	frightened	happy
hopeless	Impatient	incapable	inspired	interested	joyful	lazy
loving	Miserable	misplaced	nervous	organised	overloaded	panicky
pleasant	Pleased	productive	pushed	refreshed	regretful	rewarded
satisfied	Secure	serious	shaky	steady	tense	terrified
thoughtful	Upset	weary	worried	Other		

3. To answer the questions below use the thermometer on the right as a guide.

a) In the box below, write the degree to which you feel worried about the **Ed 101: Growth & development unit** right now.



b) What is causing you to feel this way about this unit? (Please explain)

.....

.....

.....

.....

.....

.....

.....

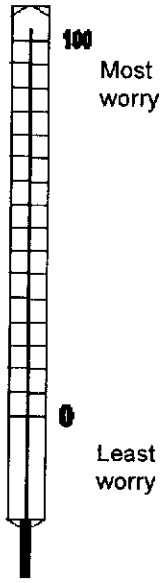
.....

.....

.....

4. To answer the questions below use the thermometer on the right as a guide.

a) In the box below, write the degree to which you feel worried about all the units you are currently enrolled in ie. **your course as a whole** right now.



b) What is causing you to feel this way about your course? (Please explain)

.....

.....

.....

.....

.....

.....

.....

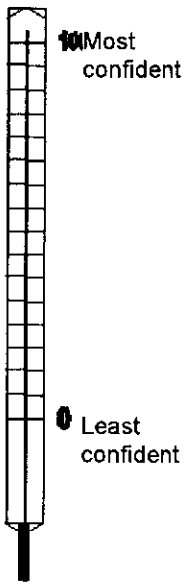
.....

.....

.....

5. To answer the questions below use the thermometer on the right as a guide.

a) In the box below, write the degree to which you feel confident about your performance in the **Ed 101: Growth & development unit** right now.



b) What is causing you to feel this way about this unit? (Please explain)

.....

.....

.....

.....

.....

.....

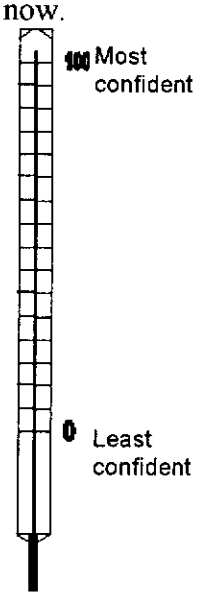
.....

.....

.....

6. To answer the questions below use the thermometer on the right as a guide.

a) In the box below, write the degree to which you feel confident about your performance in all the units you are currently enrolled in ie. **your course as a whole** right now.



b) What is causing you to feel this way about your course? (Please explain)

.....

.....

.....

.....

.....

.....

.....

.....

7. Using the scale 0 to 100, where 0 represents no discomfort at all, and 100 the most discomfort you can possibly imagine, **rate how you feel when you:**

1. attend the Ed 101 lecture		4. read your Ed 101 textbook	
2. attend the Ed 101 tutorial		5. study at home for Ed 101	
3. work on an Ed 101 assignment			

8. General:

Student number: ____ ____ ____ ____ ____ ____

Thank you for completing the questionnaire

Appendix 3.10

Student Appraisal of Teaching and Learning Strategies (SATL)

The following questions relate to the learning strategies and study skills used in the Ed 101: Growth and Development Unit. I would very much appreciate your feedback about these strategies and study skills.

Read the statements listed below. **Please circle** the number corresponding to how much you agree or disagree with each statement. Circle 1 if you strongly agree, 7 if you strongly disagree with the statement and intermediate numbers as appropriate.

		Strongly agree						Strongly disagree
		1	2	3	4	5	6	7
Goals:								
1	To me goals are important for motivation	1	2	3	4	5	6	7
2	I could have done **without** setting goals every week in this class	1	2	3	4	5	6	7
3	Monitoring goals every week in this class helped me	1	2	3	4	5	6	7
4	I thought rewarding each other when goals were achieved in Ed 101 was a waste of time	1	2	3	4	5	6	7
Planning:								
5	Planning a learning timetable is important to assist me to learn in Ed 101	1	2	3	4	5	6	7
6	Completing the calendar at the beginning of the semester did **not** help me plan my work	1	2	3	4	5	6	7
7	Making a list of the 'tasks to be completed in Ed 101' during the second part of the semester was useful to me	1	2	3	4	5	6	7
8	Completing the calendar after the semester break helped me organise my work	1	2	3	4	5	6	7
Writing 'in context':								
9	Writing helps me to learn new concepts	1	2	3	4	5	6	7
10	I found the 5-by-3 writing model of little value to me	1	2	3	4	5	6	7
11	Submitting a first draft, helped me improve my essay writing	1	2	3	4	5	6	7
12	The numbered feedback sheet was a good way to give me feedback about my project	1	2	3	4	5	6	7
13	I did **not** learn much from the Ed 101 project preparation sessions	1	2	3	4	5	6	7

		Strongly agree 1	2	3	4	5	6	Strong disagre 7
Study strategies:								
14	I do **not** need to use a variety of study strategies to be an effective learner	1	2	3	4	5	6	7
15	The PQ4R was a useful reading strategy for me	1	2	3	4	5	6	7
16	Having to write summaries for homework before the first two Ed 101 tests helped me learn	1	2	3	4	5	6	7
17	I found discussing how to survive at university, useful for me	1	2	3	4	5	6	7
18	Outlining the chapters did **not** help me learn	1	2	3	4	5	6	7
19	Being asked 'What did I learn in Ed 101 today?' was a good strategy for me	1	2	3	4	5	6	7
20	I regularly used the Ed 101 Study Guide that goes with the prescribed text (Woolfolk)	1	2	3	4	5	6	7
21	Discussing time planning was useful for me	1	2	3	4	5	6	7
22	Asking us to present overheads about how our group studied for the Ed 101 test was of little value to me	1	2	3	4	5	6	7
23	Being flexible about the time limit for completing the short-answer tests made me feel less anxious	1	2	3	4	5	6	7
24	Discussing anxiety management before the test was **not** helpful to me	1	2	3	4	5	6	7
General:								
25	I do **not** think we needed an Ed 101 class representative	1	2	3	4	5	6	7
26	Working in small groups in the Ed 101 tutorials was a good way for me to learn	1	2	3	4	5	6	7
27	The handouts (eg Study strategies; How to study for exams; How to take exams, etc) were useful to me	1	2	3	4	5	6	7
28	Learning is not just listening to what the lecturer says; for me it is actively making sense of material for myself	1	2	3	4	5	6	7
29	I think there was too much emphasis on trying to assist me to learn in Ed 101	1	2	3	4	5	6	7
30	Completing the questionnaires about how worried and confident I was made me more aware of how I felt	1	2	3	4	5	6	7

Name **three (3) things** you liked about this unit?

.....

.....

.....

.....

.....

.....

Name **three (3) things** you did **not** like about this unit?

.....

.....

.....

.....

.....

.....

What suggestions do you have for improvement?

.....

.....

.....

.....

.....

.....

Student number: ___ ___ ___ ___ ___ ___ **(Without letter code please)**

Thank you for your feedback

Appendix 3.11

Dear student

My name is Barbara de la Harpe and I am one of the Ed101, Growth and Development lecturers in the Faculty of Education. I am currently researching how to assist first year university students with their studies and I would be grateful if you would share your experiences with me. As you are a first year student in this Faculty you are the most highly qualified to assist me.

In order to understand your experiences, I will be asking you to complete a number of questionnaires. Time will be set aside in class for you to complete them.

I assure you that **all responses will be confidential**. No individual student will be identified or named and results will be reported in statistical terms only. At the end of the semester I will share my findings with you. I will ask for your student number without the letter code to ensure that your personal file cannot be accessed. The reason I am asking for your student number is to enable me to plot and relate responses over a semester.

I would appreciate your assistance as your thoughts and feelings are very important in understanding students' perspectives. By assisting with this research you will be making a worthwhile contribution to the 'next generation' of first year students and hopefully gain something for yourself as well!!

If you do not wish to participate please complete Section A at the bottom of the page.

Good luck with your studies.

Regards

Barbara de la Harpe Lecturer Ed 101	Assoc. Professor Owen F Watts Dean of the Faculty of Education

Section A:

I do not wish to be part of this study.

Signature .....

Appendix 3.12

...July, 1995

Address

Dear .....

A very special thanks for sharing your experiences, thought and feelings with me. I am very grateful for your input and assistance.

I especially appreciate the effort that you went to come into my office during your holidays. Your dedication, enthusiasm and commitment are very impressive, once again thank you.

I wish you all the best for next semester.

Regards,

Barbara

Appendix 3.13

Node list with definitions

****
(1) /Base Data
Demographics
****
(1 1) /Base Data/Group
Learning support and regular
****
(1 1 1) /Base Data/Group/learning support group
No Definition
****
(1 1 2) /Base Data/Group/Regular group
No Definition
****
(1 2) /Base Data/Gender
No Definition
****
(1 2 1) /Base Data/Gender/Male
No Definition
****
(1 2 2) /Base Data/Gender/Female
No Definition
****
(1 3) /Base Data/Previous education
School leaver or other experience prior to university eg housewife, work
****
(1 3 1) /Base Data/Previous education/School leaver
Completed TEE or equivalent in previous year
****
(1 3 2) /Base Data/Previous education/Other
Non school leaver in previous year
****
(1 3 2 1) /Base Data/Previous education/Other/University
Previous university study
****
(1 3 2 2) /Base Data/Previous education/Other/Domestic
Home duties
****
(1 3 2 3) /Base Data/Previous education/Other/Work
Paid employment in previous year
****
(1 4) /Base Data/Course
Current course enrolled in
****
(1 4 1) /Base Data/Course/ECE
B Ed Early Childhood Education
****
(1 4 2) /Base Data/Course/Primary
*** Definition:
B Ed Primary Education
****
(1 4 3) /Base Data/Course/Secondary
B Ed Secondary Education

****
(1 5) /Base Data/Metacognitive self-regulation
Metacognitive component score from MSLQ
****
(1 5 1) /Base Data/Metacog/Pre learning support
*** No Definition
****
(1 5 1 1) /Base Data/Metacog/Pre learning support/high
Score in top 25%
****
(1 5 1 2) /Base Data/Metacog/Pre learning support medium
Score in middle 50%
****
(1 5 1 3) /Base Data/Metacog/Pre learning support /low
Score in bottom 25%
****
(1 5 2) /Base Data/Metacog/Post learning support
*** No Definition
****
(1 5 2 1) /Base Data/Metacog/Post learning support/high
*** No Definition
****
(1 5 2 2) /Base Data/Metacog/Post learning support/medium
*** No Definition
****
(1 5 2 3) /Base Data/Metacog/Post learning support/low
*** No Definition
****
(1 6) /Base Data/Achievement
*** No Definition
****
(1 6 1) /Base Data/Achievement/Ed 101
*** No Definition
****
(1 6 1 1) /Base Data/Achievement/Ed 101/High
Greater than 80%
****
(1 6 1 2) /Base Data/Achievement/Ed 101/Medium
Between 60% and 80%
****
(1 6 1 3) /Base Data/Achievement/Ed 101/Low
Less than 60%
****
(1 6 2) /Base Data/Achievement/SWA
*** No Definition
****
(1 6 2 1) /Base Data/Achievement/SWA/High
Greater than 80%
****
(1 6 2 2) /Base Data/Achievement/SWA/Medium
Between 60% and 80%
****
(1 6 2 3) /Base Data/Achievement/SWA/Low
Less than 60%
****
(1 6 2 4) /Base Data/Achievement/SWA/Fail
Less than 50% (Conditional status)

****
(1 6 3) /Base Data/Achievement/A options
*** No Definition
****
(1 6 3 1) /Base Data/Achievement/A options/High
Greater than 80%
****
(1 6 3 2) /Base Data/Achievement/A options/Medium
Between 60% and 80%
****
(1 6 3 3) /Base Data/Achievement/A options/Low
Less than 60%
****
(1 6 3 4) /Base Data/Achievement/A options/DNC
Did not complete unit
****
(2) /Questions
Semester 1's interview questions
****
(2 1) /Questions/question 1
What are your impressions of university after being here for one semester?
****
(2 2) /Questions/question 2
What should your lecturer do to assist you learn? Specifically to help you?
****
(2 3) /Questions/question 3
What sort of teaching strategies do you find help you to learn the subject?
****
(2 4) /Questions/question 4
Was anything included in Ed101 that made it different from your other units (other than content)?
****
(2 5) /Questions/question 5
Can you explain the particular method you used to help you plan and write the report?
****
(2 6) /Questions/question 6
Do you have a particular method for preparing for the short answer test?
****
(2 7) /Questions/question 7
Can you explain how you went about preparing for the Ed 101 exam? Origin?
****
(2 8) /Questions/question 8
Do you reflect (look back) on your learning strategies?
****
(2 9) /Questions/question 9
Rating of learning strategies used in Ed101.
****
(3) /Beliefs
Beliefs about university in comparison to school
****
(3 1) /Beliefs/uni
*** No Definition
****
(3 1 1) /Beliefs/uni/different
*** No Definition
****
(3 1 1 1) /Beliefs/uni/different/positive
*** No Definition

****
(3 1 1 2) /Beliefs/uni/different/negative
*** No Definition
****
(3 1 1 3) /Beliefs/uni/different/neither
*** No Definition
****
(3 1 2) /Beliefs/uni/Similar
*** No Definition
****
(3 1 2 1) /Beliefs/uni/Similar/positive
*** No Definition
****
(3 1 2 2) /Beliefs/uni/Similar/negative
*** No Definition
****
(3 1 2 3) /Beliefs/uni/Similar/neither
*** No Definition
****
(3 2) /Beliefs/origins of strategies
Beliefs about learning strategies used for tests, exams and essay writing.
****
(3 2 1) /Beliefs/origins of strategies/for tests
*** No Definition
****
(3 2 1 1) /Beliefs/origins of strategies/for tests/school
*** No Definition
****
(3 2 1 1 1) /Beliefs/origins of strategies/for tests/school/History
*** No Definition
****
(3 2 1 1 2) /Beliefs/origins of strategies/for tests/school/Social studies
*** No Definition
****
(3 2 1 1 3) /Beliefs/origins of strategies/for tests/school/English
*** No Definition
****
(3 2 1 1 4) /Beliefs/origins of strategies/for tests/school/Human Biology
*** No Definition
****
(3 2 1 1 5) /Beliefs/origins of strategies/for tests/school/Chemistry
*** No Definition
****
(3 2 1 1 6) /Beliefs/origins of strategies/for tests/school/Biology
*** No Definition
****
(3 2 1 1 7) /Beliefs/origins of strategies/for tests/school/Mathematics
*** No Definition
****
(3 2 1 1 8) /Beliefs/origins of strategies/for tests/school/Economics
*** No Definition
****
(3 2 1 1 9) /Beliefs/origins of strategies/for tests/school/no subject
*** No Definition
****
(3 2 1 2) /Beliefs/origins of strategies/for tests/university
*** No Definition

****
(3 2 1 2 1) /Beliefs/origins of strategies/for tests/university/Ed101
*** No Definition
****
(3 2 1 2 2) /Beliefs/origins of strategies/for tests/university/Project preparation
*** No Definition
****
(3 2 1 2 3) /Beliefs/origins of strategies/for tests/university/other units
*** No Definition
****
(3 2 1 2 4) /Beliefs/origins of strategies/for tests/university/uni general
*** No Definition
****
(3 2 1 3) /Beliefs/origins of strategies/for tests/other
from mother, family member, friend, work colleague
****
same pattern of nodes for beliefs about origins f strategies for exams and writing task (3 2 2) - (3 2 3)
****
(3 3) /Beliefs/effectiveness tests
Beliefs about effectiveness of strategies used when studying for the tests
****
(3 3 1) /Beliefs/effectiveness tests/works
*** No Definition
****
(3 3 2) /Beliefs/effectiveness tests/does not work
*** No Definition
****
(3 3 3) /Beliefs/effectiveness tests/needs changing
*** No Definition
****
(3 3 4) /Beliefs/effectiveness tests/conditional
*** No Definition
****
(3 3 5) /Beliefs/effectiveness tests/good, great
*** No Definition
****
(3 3 6) /Beliefs/effectiveness tests/Not good
*** No Definition
****
(3 3 7) /Beliefs/effectiveness tests/time needed
*** No Definition
****
(3 3 8) /Beliefs/effectiveness tests/confident
*** No Definition
****
(3 3 9) /Beliefs/effectiveness tests/helps learn
*** No Definition
****
same pattern of nodes for beliefs about effectiveness o f strategies for exams and writing task
(3 4) - (3 5)
****
(4) /Ed101 course
*** Definition:
Answers to the question 'was anything included in Ed101 that made it different from other courses?
****
(4 1) /Ed101 course/different
*** No Definition

****
(4 1 1) /Ed101 course/different/teaching style
Teacher characteristics or style that make the Ed101 unit different to other courses
****
(4 1 1 1) /Ed101 course/different/teaching style/guide
Teacher acts as a facilitator of student learning eg provide information
****
(4 1 1 2) /Ed101 course/different/teaching style/support
Teacher provides support eg willing to help, available, approachable
****
(4 1 1 2 1) /Ed101 course/different/teaching style/support/yes
*** No Definition
****
(4 1 1 2 2) /Ed101 course/different/teaching style/support/no
*** No Definition
****
(4 1 1 3) /Ed101 course/different/teaching style/direct
Teacher acts as a director of student learning eg controls, monitors and directs
****
(4 1 1 4) /Ed101 course/different/teaching style/none
Teacher has no role in assisting students learn.
****
(4 1 1 5) /Ed101 course/different/teaching style/challenge
Teacher provides a challenge eg level of content, theory
****
(4 1 1 6) /Ed101 course/different/teaching style/develop
Teacher develops students eg building self-esteem, learning strategies
****
(4 1 1 7) /Ed101 course/different/teaching style/teacher global
*** No Definition
****
(4 1 1 7 1) /Ed101 course/different/teaching style/teacher global/yes
*** No Definition
****
(4 1 1 7 2) /Ed101 course/different/teaching style/teacher global/no
*** No Definition
****
(4 1 2) /Ed101 course/different/strategies
Strategies used that make the Ed101 unit different to other courses
****
(4 1 2 1) /Ed101 course/different/strategies/organisational
Teacher uses strategies that help students organise their learning eg goal setting
****
(4 1 2 2) /Ed101 course/different/strategies/materials
Teacher provides material eg worksheets, handouts, study guide
****
(4 1 2 3) /Ed101 course/different/strategies/process
Teacher teaching in a way that helps students learn.
****
(4 1 2 3 1) /Ed101 course/different/strategies/process/small group work
*** No Definition
****
(4 1 2 3 2) /Ed101 course/different/strategies/process/clarifying
*** No Definition
****
(4 1 2 3 3) /Ed101 course/different/strategies/process/giving feedback
*** No Definition

****
(4 1 2 3 4) /Ed101 course/different/strategies/process/questioning
*** No Definition
****
(4 1 2 3 5) /Ed101 course/different/strategies/process/variety
*** No Definition
****
(4 1 2 3 6) /Ed101 course/different/strategies/process/model then practice
*** No Definition
****
(4 1 2 3 7) /Ed101 course/different/strategies/process/being a role model
*** No Definition
****
(4 1 2 3 8) /Ed101 course/different/strategies/process/variety to reinforce content
*** No Definition
****
(4 1 2 3 9) /Ed101 course/different/strategies/process/teacher talking
*** No Definition
****
(4 1 2 3 10) /Ed101 course/different/strategies/process/interactive
*** No Definition
****
(4 1 2 3 11) /Ed101 course/different/strategies/process/notetaking
*** No Definition
****
(4 1 2 3 12) /Ed101 course/different/strategies/process/rewards
*** No Definition
****
(4 1 2 3 13) /Ed101 course/different/strategies/process/overheads
*** No Definition
****
(4 1 2 3 14) /Ed101 course/different/strategies/process/consolidation
*** No Definition
****
(4 1 2 3 15) /Ed101 course/different/strategies/process/assessment
*** No Definition
****
(4 1 2 3 16) /Ed101 course/different/strategies/process/summaries
*** No Definition
****
(4 1 2 4) /Ed101 course/different/strategies/content
*** No Definition
****
(4 1 2 4 1) /Ed101 course/different/strategies/content/relevant
*** No Definition
****
(4 1 2 4 2) /Ed101 course/different/strategies/content/irrelevant
*** No Definition
****
(4 2) /Ed101 course/same
*** No Definition
****
(5) /Teaching
Role of the teacher in helping students learn.
****
(5 1) /Teaching/style
What the lecturer can do to assist the students learn.

****
(5 1 1) /Teaching/style/guide
Teacher acts as a facilitator of student learning. Student centred. eg offering suggestions
****
(5 1 2) /Teaching/style/support
Affective component involved, eg be approachable, available
****
(5 1 3) /Teaching/style/direct
Teacher to control, monitor and regulate students' learning.
****
(5 1 4) /Teaching/style/none
Student believes that it is not up to the lecturer. Responsibility lies with him/her
****
(5 1 5) /Teaching/style/challenge
*** No Definition
****
(5 1 6) /Teaching/style/develop
*** No Definition
****
(5 2) /Teaching/strategies
*** No Definition
****
(5 2 1) /Teaching/strategies/organisational
teaching strategies that help student organise their learning eg outlines, timetables
****
(5 2 2) /Teaching/strategies/materials
Teacher to provide teaching materials eg worksheets, handouts
****
(5 2 3) /Teaching/strategies/process
Teacher to use strategies and teach in a way that helps the students learn
****
(5 2 3 1) /Teaching/strategies/process/small groupwork
*** No Definition
****
(5 2 3 1 1) /Teaching/strategies/process/small groupwork/yes
*** No Definition
****
(5 2 3 1 2) /Teaching/strategies/process/small groupwork/no
*** No Definition
****
(5 2 3 2) /Teaching/strategies/process/clarifying tasks
*** No Definition
****
(5 2 3 3) /Teaching/strategies/process/giving feedback
*** No Definition
****
(5 2 3 4) /Teaching/strategies/process/questioning
*** No Definition
****
(5 2 3 5) /Teaching/strategies/process/variety
*** No Definition
****
(5 2 3 6) /Teaching/strategies/process/model & practice
*** No Definition
****
(5 2 3 7) /Teaching/strategies/process/be a role model
*** No Definition

****
(5 2 3 8) /Teaching/strategies/process/reinforce by variety
*** No Definition
****
(5 2 3 9) /Teaching/strategies/process/teacher explaining, talking
*** No Definition
****
(5 2 3 10) /Teaching/strategies/process/make it interactive
*** No Definition
****
(5 2 3 11) /Teaching/strategies/process/notetaking
students taking notes from lecture, tutorial, teacher talking and students listening
****
(5 2 3 11 1) /Teaching/strategies/process/notetaking/yes
*** No Definition
****
(5 2 3 11 2) /Teaching/strategies/process/notetaking/no
*** No Definition
****
(6) /tests
Learning strategies used when studying for the tests. Categories based on Pintrich's MSLQ data categories and literature on student learning
****
(6 1) /tests/cognitive strategies
Cognitive strategies
****
(6 1 1) /tests/cognitive strategies/rehearsal
Eg, repeating, reciting, reading over and over, underlining, highlighting
****
(6 1 2) /tests/cognitive strategies/elaboration
Eg, paraphrasing, summarising, creating analogies, generative notetaking
****
(6 1 3) /tests/cognitive strategies/organisation
Eg, clustering, outlining, selecting the main idea, ordering, grouping
****
(6 2) /tests/metacognition
Metacognitive strategies
****
(6 2 1) /tests/metacognition/knowledge of cognition
*** No Definition
****
(6 2 1 1) /tests/metacognition/knowledge of cognition/self
knowledge of self as a learner
****
(6 2 1 2) /tests/metacognition/knowledge of cognition/task
knowledge of the learning task
****
(6 2 1 3) /tests/metacognition/knowledge of cognition/environment
Knowledge of the learning environment
****
(6 2 2) /tests/metacognition/control of cognition
*** No Definition
****
(6 2 2 1) /tests/metacognition/control of cognition/planning
Eg, goal setting, task analysis, activating relevant prior knowledge
****
(6 2 2 2) /tests/metacognition/control of cognition/monitoring
Eg, tracking one's attention, self-testing, self-questioning

****
(6 2 2 3) /tests/metacognition/control of cognition/evaluating - adapting
Eg, fine tuning and continuous adjustment of cognitive activities
****
(6 3) /tests/resource management
*** No Definition
****
(6 3 1) /tests/resource management/time and study environment
Eg, managing and regulating the study environment, goal setting, scheduling
****
(6 3 1 1) /tests/resource management/time and study environment/appropriate
Eg, study in time, complete summaries, learn appropriate material
****
(6 3 1 2) /tests/resource management/time and study environment/inappropriate
Eg, leave until the last minute, cram, do least amount of work
****
(6 3 2) /tests/resource management/effort regulation
Eg, maintaining effort and attention in the face of distractions and uninteresting tasks
****
(6 3 3) /tests/resource management/peer learning
Eg, collaborating with peers, dialogue, mutual sharing of ideas
****
(6 3 4) /tests/resource management/help seeking
Management of the support of others
****
(6 3 4 1) /tests/resource management/help seeking/teacher
Actively seeking assistance from the teacher
****
(6 3 4 2) /tests/resource management/help seeking/peers
Actively seeking assistance from peers
****
(6 3 4 3) /tests/resource management/help seeking/other
Actively seeking assistance from family, boyfriend, work colleagues etc
****
(6 4) /tests/motivation
*** No Definition
****
(6 4 1) /tests/motivation/value component
Perceptions why engaging in the learning task, course as a whole
****
(6 4 1 1) /tests/motivation/value component/intrinsic goal orientation
Eg, participating for challenge, curiosity , mastery
****
(6 4 1 2) /tests/motivation/value component/extrinsic goal orientation
Eg, participating for grades, rewards, performance, competition, evaluation
****
(6 4 1 3) /tests/motivation/value component/task value
Evaluation of how interesting, important, useful task is
****
(6 4 2) /tests/motivation/expectancy
*** No Definition
****
(6 4 2 1) /tests/motivation/expectancy/control of learning beliefs
Believe that positive learning outcomes are contingent on own effort
****
(6 4 2 2) /tests/motivation/expectancy/self-efficacy for learning performance
Success referring to performance expectations, self efficacy

****
(6 4 3) /tests/motivation/affective component
*** No Definition
****
(6 4 3 1) /tests/motivation/affective component/test anxiety
Two components, worry component eg thoughts, emotionality component
****
(6 4 3 2) /tests/motivation/affective component/general affect
Feelings associated with learning
****
(6 4 3 2 1) /tests/motivation/affective component/general affect/positive feelings
Positive feelings eg feel good, great, happy, successful
****
(6 4 3 2 2) /tests/motivation/affective component/general affect/negative feelings
Negative feelings eg feel angry, worried, disappointed
****
(6 5) /tests/method present
Student's answer to the question do you have a method that you use to study
****
(6 5 1) /tests/method present/yes
*** No Definition
****
(6 5 1 1) /tests/method present/yes/Consistent use
*** No Definition
****
(6 5 1 2) /tests/method present/yes/inconsistent use
*** No Definition
****
(6 5 2) /tests/method present/no
*** No Definition
****
(6 5 3) /tests/method present/Strategic behaviour
Eg picking areas to study, tips from teacher, studying only certain areas
****
(6 5 3 1) /tests/method present/Strategic behaviour/yes strategic
*** No Definition
****
(6 5 3 2) /tests/method present/Strategic behaviour/not strategic
*** No Definition
****
(6 5 4) /tests/method present/reward focus
*** No Definition
****
(7) /writing
same pattern of nodes for exams and writing task nodes redefined for writing task (7.1) and (8.1)
****
(9) /reflection
*** Definition:
Answers to "Do you ever stop and look back or reflect on your own learning?"
****
Semester 2 same pattern as for Semester 1 from (10.1) to (18)
****
(10 1) /S2Base Data/S2Group
Semester 2 learning support 1, learning support 2, regular
****
(18) /S2reflection
Answer to 'do you ever stop and look back or reflect on your own learning'
****

Six Basic Rules Essential to Summarisation

1. **Delete unnecessary material**

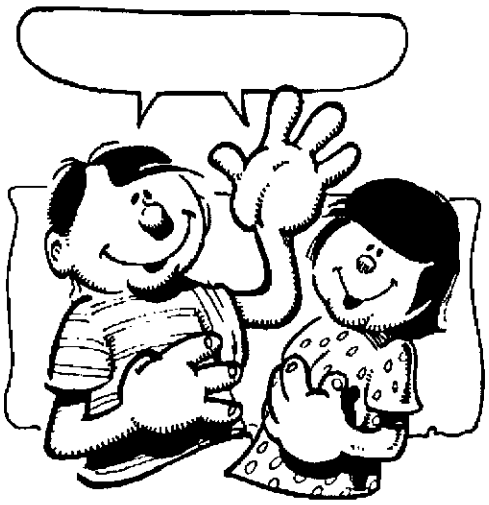
2. **Delete material important but redundant**

3. **Substitute a superordinate term**
   eg animals for cats, dogs, birds etc

4. **Substitute a superordinate action**
   eg went to town for left house, caught taxi, etc

5. **Select topic sentence**

6. **If no topic sentence invent your own**



In groups

1. **Complete the Summary Checklist**

2. **Discuss what each member decided the chapter's main points were**

3. **As a group, decide what you think the chapter's three most important points are**

4. **Use your summaries to list the most important points about classroom rules and procedures**

5. **Choose one person to report to the class**

Appendix 3.16

Summary Checklist

Working in pairs use the checklist below.

Discuss how you can change the way you are currently completing your summary to improve your method. Alternatively congratulate yourself for doing an excellent job and then encourage your partner to do the same!!

	Yes	No	Not sure
My summary is one page long	☐	☐	☐
It includes the chapter's main points	☐	☐	☐
The main points are in my own words	☐	☐	☐
It includes a drawing / illustration on the back page	☐	☐	☐
I have used the 6 rules of summarisation	☐	☐	☐
I have deleted unnecessary material	☐	☐	☐
I have deleted material important but redundant	☐	☐	☐
I have substituted superordinate terms	☐	☐	☐
I have substituted superordinate actions	☐	☐	☐
I have selected the topic sentences	☐	☐	☐
I have invented topic sentences when necessary	☐	☐	☐
Doing a summary helps me to learn the concepts	☐	☐	☐
I can see the value in doing a summary	☐	☐	☐

Appendix 3.17

Addendum to the Ed 102 Unit Guide

Assisting Learning and Understanding in Educational Psychology.

You learn best when you have a good knowledge base in the area you are studying. To help you gain a good knowledge base you are required to bring to class each week a summary of the reading assigned for that week. Please see the course calendar for details of the week's reading.

Each summary should:

- not exceed one page in total,
- include a summary of the chapter's main points,
- a drawing / diagram / illustration / concept map on the back of the page.

Be selective when summarising eg turn an important paragraph into one sentence only. In addition to being selective, actively transform the information into your own words. Look for organisational patterns in the material and use them to guide your summary. Note connections between what you are hearing or reading and other things you already know. By associating information with something you already know, helps move information from the short-term memory to the long term memory. Draw diagrams to illustrate relationships.

Each week time will be set aside in class for students to discuss, in small groups, the week's readings and compare their summaries. A general class discussion will then follow. Students who have not completed the week's summary will not be able to participate in the small group discussions.

The 'summary strategy' is a response to the request by students to assist them to learn and apply the concepts in Educational Psychology (based on last semester's feedback). The purpose of the summary is therefore to support you gain an understanding of some of the theoretical concepts covered in Ed 102: Theories of Learning.

Remember: We are active processors of information who initiate experiences that lead to learning. We seek out information to solve problems and reorganise what we already know to achieve new learning. Instead of being passively influenced, what we already know determines to a great extent what we will learn remember and forget.

I invite you to take full advantage of the support offered

Appendix 3.18

Summary of Chapter 11: Classroom Management and Communication	
Classrooms need managers:	
Ecology of classrooms:	The goals of classroom management:
Planning for good management: Some research results: Rules and procedures required: Getting started:	
Maintaining effective management: Encouraging engagement: Prevention is the best medicine: Dealing with discipline problems: Special problems with 2ndry students:	
Special programs for classroom management: Group consequences: Token reinforcement programs: Contingency contract programs:	
The need for communication: Messages sent - received: Diagnosis: Counselling: Confrontation & assertive discipline:	

Draw a diagram / concept map illustrating how you can use assertive discipline and Kounin's principles in the classroom.

Appendix 3.19

Feedback on Ed 102 Draft Essay
Measurement and Evaluation

NOTE:
When reviewing your theoretical background please use the following key. Numbers are placed in the margins or body of your assignment

(If you have submitted a contents page the following applies. You did not have to submit a contents page this time. However, you must remember to include a contents page when you submit your final report.)

1. Contents page

1.1 Numbers and/or headings do not match those in the main body
1.2 Please check that page numbers match those used in main body
1.3 Please check headings used match main body
1.4 Please expand to include the major sub-headings used in your assignment
1.5 Place references / appendix last please
1.6 Layout is not clear and / or easy to read
1.7 See *The Essay* p. 6 please

2. Theoretical background

2.1 Introduction

2.1.1 Please include an opening sentence
2.1.2 Please include a statement of main thesis
2.1.3 Simply list the main areas / issues to be covered
2.1.4 Issues should not be discussed in the introduction
2.1.5 The introduction is hard to identify
2.1.6 This is not a complete introduction. See *The Essay* p10 and 12 for correct format.

2.2 Main body

2.2.1 Are the Issues linked to the topic?
2.2.2 Please check that the issues follow pattern set in the intro
2.2.3 Please check all the main issues are covered, see discussion questions
2.2.4 Please discuss Bloom's taxonomy
2.2.5 Please make sure the issues link and flow
2.2.6 Greater synthesis of ideas presented is needed
2.2.7 Reference all authors' ideas please
2.2.8 Please check content is correct
2.2.9 Too much detail, edit please

2.3 Conclusion

2.3.1 Please do not include new issues in the conclusion
2.3.2 Synthesis of ideas please / reinforce points presented
2.3.3 Work on / include a final sentence

3. General

3.1 Check your format and structure
3.2 You have relied too heavily on your own text
3.3 The class activity should not be discussed in the essay
3.4 Read aloud please
3.5 Say what you mean clearly
3.6 Please check your sentence construction
3.7 Please write 'about' ideas and not 'to' the reader. Write in the third person
3.8 Check how to reference when paraphrasing
3.9 Check how to reference when using the exact words of the author
3.10 Check reference list format
3.11 Please use headings and sub-headings
3.12 Please edit your work
3.13 Please work on your presentation eg folder, headings, neatness

Appendix 3.20

Expanded Learning Support Program in Semester 2, 1995, including date, Ed102 topic, learning support and administration of questionnaires.

Assisting first year students become efficient learners: Timetable, Extended learning support group 1 Semester 2, 1995.		
Week	**Date/Topic**	**Learning Support**
1	24 July Introduction	**Goals:** Vote re weekly goal setting goal **Planning:** Calendar and weekly timetable Vote re submitting draft essay **Awareness:** Weekly summary strategy 6 rules of summarisation Rating value of activities for learning **Q're:** Complete Zuckerman questionnaire
2	31 July	No workshop lecture only
3	07 Aug Behavioural Learning Theory	**Goals:** Monitoring, rewarding and setting **Planning:** Revising calendar and timetable **Awareness:** Small group discussion of summary's main points (see overhead) Model chapter summary and rules (see h/out) Reward for completed summary W.D.I.L.T? **Writing:** Project and draft essay
4	14 Aug Cognitive Learning Theory	**Goals:** Monitoring, rewarding and setting **Awareness:** Groups discuss chapter summary Complete summary checklist Planning, monitoring and evaluating study Poster of information processing model W.D.I.L.T? **Writing:** Discuss project's method procedure Discuss essay's main issues
5	21 Aug	No workshop, complete short answer test in lecture **Writing:** Collect draft essay **Q're:** Complete Zuckerman questionnaire after test
6	28 Aug	No workshop: Practice teaching
7	05 Sept	No workshop: Practice teaching
8	11 Sept Humanistic Theory	**Goals:** Monitoring, rewarding and setting **Awareness:** Groups use summary to make poster (o/head) Reward for summary Discuss study strategy W.D.I.L.T? **Writing:** Monitoring errors in draft essay
9	18 Sept	No workshop short answer test in lecture **Q're:** Complete Zuckerman questionnaire after test

10	25 Sept	No workshop: Semester two's week free from class
11	02 Oct Measurement & Evaluation	**Goals:** Monitoring, rewarding and setting **Awareness:** Check summaries, reward Groups discuss chapter summary Complete summary checklist Prompt to plan and be organised Planning, semester calendar and lists Study strategy: summaries of text Action plan
12	09 Oct Motivation	**Goals:** Monitoring, rewarding and setting **Awareness:** Check summaries, reward Groups discuss chapter summary Complete summary checklist Outline, keywords, or concept map, reward **Writing:** Give students feedback and discuss strategy **Q're:** Zuckerman Q're and recording of results
13	16 Oct Classroom Management	**Goals:** Monitoring, rewarding and setting **Awareness:** Check summaries, reward Groups discuss chapter summary Complete summary checklist How to study for exams Planning, monitoring evaluating study Positive self-talk, being prepared
14	23 Oct Effective Teaching	**Goals:** Monitoring, rewarding and setting **Awareness:** How to take an exam W.D.I.L.T? **Q're:** Pintrich and State Trait Questionnaires SAT and SATLS
15	30 Oct	Final Test (multiple choice) **Q're:** Complete Zuckerman questionnaire after test

Appendix 3.21

Examples of Ed102 Theories of Learning short answer test questions and multiple choice test items

Short Answer Test 1:
Compare and contrast positive reinforcement, negative reinforcement and punishment. using and example of each, illustrate the use of positive reinforcement, negative reinforcement and punishment in the classroom.

Short Answer Test 2:
Draw and label a diagram of the information processing model of learning. Give six examples of how you, the teacher, can help your students become efficient information processors.

Short Answer Test 3:
What criteria would you use to judge whether a classroom could be described as humanistic?

Examples of the Multiple choice test items
(every 6th item out of total of 60 included below)

6. Sarah has a few students who are occasionally disruptive in class, so she tries to praise their positive behaviour. When they have been quiet for a few minutes, she says "Good, Joe and Renee". This is likely to be ineffective because it:
   a) reinforces the wrong behaviour
   b) does not specify the behaviour
   c) occurs too infrequently
   d) is not individually directed

12. Items may be stored in short-term memory for approx _____ seconds.
   a) 20
   b) 45
   c) 60
   d) 90

18. You discover that working on a typewriter makes it easier for you to do word processing on a computer. This would best be termed _____ transfer.
   a) identical
   b) zero
   c) positive
   d) negative

24. Teachers who use a learner centred approach as advocated by Rogers should posses all the following qualities except:
   a) empathic awareness of student feelings
   b) prizing of students as individuals
   c) trust in the capacity of students to develop their own potential
   d) confidence in their ability to instil a positive self-concept in students

30. All of the following situations reflect the cardinal principle of humanistic education except:
    a)an elementary school teacher allows students to determine class rules and consequences for infractions to those rules
    b) a teacher denies a request by students to have a spelling bee contest with another class as a means of helping them study for the final spelling test
    c) a high school biology teacher doesn't schedule specific topics for the final month of the semester so students can pursue topics of their choice and help teach these topics to the class
    d) a teacher gives each student a choice of whether to have a test, do a project, or write a ten-page essay for their mid-semester grade

36. Which of the following is NOT one of Kounin's techniques?
    a) ripple effect
    b) overlapping
    c) assertive discipline
    d) smoothness and momentum

42. Which of the following clearly illustrates extrinsic motivation?
    a) an assignment worth ten bonus points
    b) an optional assignment
    c) a class discussion on a topic of your choice
    d) a paper to be written about personal experience

48. The students in Ms Smith's class know that they will reach their instructional goal only if the other students also reach that goal. their belief is typical of a (n) ____ goal structure
    a) cooperative
    b) competitive
    c) individualistic
    d) exclusive

54. To make sure you are presenting a lesson clearly you should do all of the following except:
    a) signal transitions between topics
    b) do written work yourself to identify possible problems
    c) use explanatory links as much as possible
    d) avoid any pauses in presenting material

60. It is generally believed that teaching should become less direct as:
    a) student ability decreases
    b) student age decreases
    c) instructional goals become more affective in nature
    d) teacher experience decreases

Appendix 3.22

Student Appraisal of Teaching and Learning Strategies

The following questions relate to the learning strategies and study skills implemented in the Ed102: Theories of Learning Unit. I would very much appreciate your feedback about these strategies and study skills.

Read the statements listed below. **Please circle** the number corresponding to how much you agree or disagree with each statement. Circle 1 if you strongly agree, 7 if you strongly disagree with the statement and intermediate numbers as appropriate.

		Strongly agree 1	2	3	4	5	6	Strongly disagre 7
Goals:								
1.	To me goals are important for motivation	1	2	3	4	5	6	7
2.	I could have done **without** setting goals every week in this class	1	2	3	4	5	6	7
3.	Monitoring goals every week in this class helped me	1	2	3	4	5	6	7
4.	I thought rewarding each other when goals were achieved in Ed 102 was a **waste of time**	1	2	3	4	5	6	7
Planning:								
5.	Planning a learning timetable is important to assist me to learn in Ed 102	1	2	3	4	5	6	7
6.	Completing the calendar at the beginning of the semester **did not** help me plan my work	1	2	3	4	5	6	7
7.	Making a list of the 'tasks to be completed' during the second part of semester was useful	1	2	3	4	5	6	7
8.	Completing the 'tasks to be completed' list after the semester break helped me organise my work	1	2	3	4	5	6	7
Writing in - context:								
9.	Writing helps me learn new concepts	1	2	3	4	5	6	7
10.	Submitting a first draft, helped me improve my essay writing	1	2	3	4	5	6	7
11.	The number system and feedback sheet was a good way to give me feedback	1	2	3	4	5	6	7
12.	I needed **more** help with my evaluation assignment	1	2	3	4	5	6	7
13.	We **should have** had project preparation sessions this semester	1	2	3	4	5	6	7
14.	I think that having project preparation sessions this semester **would have** helped me	1	2	3	4	5	6	7

Study strategies:

15.	**I do not** need to use a variety of study strategies to be an effective learner	1	2	3	4	5	6	7
16.	I thought having to write a summary each week was a good idea	1	2	3	4	5	6	7
17.	I found discussing in groups how we completed our summary was useful	1	2	3	4	5	6	7
18.	I found being shown the **6 rules** of summarisation useful	1	2	3	4	5	6	7
19.	Using the **6 rules** of summarisation helped me make a better summary	1	2	3	4	5	6	7
20.	I **did not** use the 6 rules when making my summary	1	2	3	4	5	6	7
21.	I found being given a **'summary outline'** to complete was a good way to help me make a summary	1	2	3	4	5	6	7
22.	I found the **'summary checklist'** helped me improve my summary	1	2	3	4	5	6	7
23.	Rewarding me for completing a summary was **not** a good idea	1	2	3	4	5	6	7
24.	Having tutorial activities that relied on me doing the summary helped me learn	1	2	3	4	5	6	7
25.	I feel that making the summary helped me understand the Ed 102 content better	1	2	3	4	5	6	7
26.	I managed to make a summary for **(please circle)**	**all classes**			**some classes**			**never**

General:

27.	Asking 'What did I learn today?' was a good strategy	1	2	3	4	5	6	7
28.	I regularly used the study guide that goes with the prescribed text (Woolfolk)	1	2	3	4	5	6	7
29.	Working in small groups in the Ed 102 tutorials was a good way for me to learn	1	2	3	4	5	6	7
30.	The handouts (eg How to study for exams; How to take exams) were useful to me	1	2	3	4	5	6	7
31.	There was **too much** emphasis on trying to assist me to learn in Ed 102	1	2	3	4	5	6	7
32.	Learning is not just listening to what the lecturer says it is actively making sense of material for myself	1	2	3	4	5	6	7
33.	Completing the questionnaires about how worried and confident I was made me more aware of how I felt	1	2	3	4	5	6	7

Name **three (3) things** you liked about this unit.

.....

.....

.....

.....

.....

.....

Name **three (3) things** you did **not** like about this unit.

.....

.....

.....

.....

.....

.....

What suggestions do you have for improvement?

.....

.....

.....

.....

.....

.....

.....

Student number: ___ ___ ___ ___ ___ ___ **(Without letter code please)**

Thank you for your feedback

Appendix 3.23

Internal reliability coefficients for MSLQ questionnaire scales at beginning of semester (time 1), end of semester one (time 2), end of semester 2 (time 3), and norm values

Scales	Cronbach alphas			
	time 1	*time 2*	*time 3*	*norm*
Motivation scales				
intrinsic goal orientation	.70	.67	.71	.74
extrinsic goal orientation	.52	.69	.76	.62
task value	.81	.88	.92	.90
control of learning beliefs	.64	.64	.69	.68
self-efficacy learning & performance	.92	.91	.92	.93
test anxiety	.73	.84	.85	.80
Learning strategies scales				
rehearsal	.63	.70	.77	.69
elaboration	.74	.75	.83	.76
organisation	.58	.69	.76	.64
critical thinking	.80	.81	.83	.80
metacognitive self-regulation	.70	.69	.80	.79
time and study environment	.72	.71	.76	.76
effort regulation	.72	.74	.79	.69
peer learning	.61	.61	.76	.76
help seeking	.57	.67	.65	.52

Internal reliability coefficients for the Sate-Trait Anxiety Inventory (STAI) scales at beginning of semester (time 1), end of semester one (time 2), end of semester 2 (time 3), and norm values

Scale	Cronbach alphas			
	time 1	*time 2*	*time 3*	*norm*
State anxiety	.95	.96	.94	0.93
Trait anxiety	.92	.94	.94	0.91

Appendix 4.1

"Pre - Post" Effect Sizes for Learning Strategy use by Students

Measure	means (*M*) pre	means (*M*) post	within *SD*	Effect Size
rehearsal				
LSG1	5.20	5.53	1.08	0.31
RG1	5.02	5.21	1.04	0.18
elaboration				
LSG1	5.19	5.29	0.88	0.11
RG1	5.39	5.37	0.85	-0.02
organisation				
LSG1	5.17	5.35	1.13	0.16
RG1	5.44	5.06	0.94	-0.40
critical thinking				
LSG1	4.28	4.21	0.94	-0.07
RG1	4.39	4.47	1.17	0.07
metacognitive self-reg				
LSG1	4.42	4.64	0.69	0.32
RG1	4.70	4.62	0.73	-0.11
time & study environ				
LSG1	5.17	4.95	0.94	-0.23
RG1	5.19	4.87	0.89	-0.36
effort regulation				
LSG1	4.98	5.06	1.07	0.07
RG1	5.12	4.75	1.17	-0.32
peer learning				
LSG1	3.40	3.55	1.27	0.12
RG1	3.64	3.51	1.23	-0.11
help seeking				
LSG1	4.60	4.34	1.18	-0.22
RG1	4.72	4.44	1.14	-0.25

Note. LSG1 $n = 43$; RG1 $n = 85$. Positive values indicate higher post than pre values.

Appendix 4.2

Mean and Standard Deviation Scores for Learning Strategy use by Students when at High School

	LSG1 (n = 43)		RG1 (n = 85)	
Strategy	*M*	*SD*	*M*	*SD*
rehearsal	5.20	1.13	5.02	1.03
elaboration	5.19	0.97	5.39	0.84
organisation	5.17	1.11	5.44	0.89
critical thinking	4.28	0.96	4.39	1.20
metacognitive self regulation	4.42	0.73	4.70	0.70*
time & study environment	5.17	0.94	5.19	0.86
effort regulation	4.98	1.10	5.12	1.09
peer learning	3.40	1.26	3.64	1.26
help seeking	4.60	1.12	4.72	1.07

Note. $*p < .05$.

Appendix 4.3

Number and Percentage of students mentioning the origins of the learning method they used when learning for the tests and the examination, and when completing the writing task

	tests		examination		writing tasks	
Origin	LSG1[a]	RG1[b]	LSG1[a]	RG1[b]	LSG1[a]	RG1[b]
School						
'English'	0	0	0	0	5(33)	2(33)
'History'	0	1(17)	1(7)	0	1(7)	0
'Social Studies'	1(7)	0	0	0	2(14)	0
'Human Biology'	2(14)	1(17)	2(14)	0	0	0
'Chemistry'	0	0	1(7)	0	0	0
'No subject'	7(47)	3(50)	7(47)	3(50)	7(47)	2(33)
Total	10(67)	5(83)	11(73)	3(50)	15(100)	4(66)
University						
'Ed101'	6(40)	1(17)	2(14)	0	7(47)	3(50)
'Other unit'	0	0	1(7)	0	2(14)	1(17)
'Uni general'	1(7)	0	3(20)	0	3(20)	0
Total	7(47)	1(17)	6(40)	0(0)	12(80)	4(67)
Other						
'Mother'	1(7)	0	0	0	0	0
'Peer'	1(7)	1(17)	1(7)	0	0	0
'Tutor'	1(7)	0	0	0	1(7)	0
'Study course'	0	0	0	0	3(20)	1(17)
'not at school!'	0	0	0	0	4(27)	0
'unsure'	0	0	0	3(50)	0	1(17)
	3(20)	1(17)	1(7)	3(50)	8(67)	2(33)

Note. [a]LSG1 $n = 15$, [b]RG1 $n = 6$.

Appendix 4.4

Mean and Standard Deviation Scores for students' Motivational Orientations at beginning of Semester 1, 1995

	LSG1 (n = 43)		RG1 (n = 85)	
Strategy	*M*	*SD*	*M*	*SD*
intrinsic goal orientation	5.38	0.93	5.38	0.94
extrinsic goal orientation	5.58	0.92	5.44	0.98
task value	6.10	0.72	6.11	0.71
control of learning beliefs	5.84	0.82	5.63	0.91
self-efficacy learning & performance	5.42	0.83	5.38	0.99
test anxiety	4.05	1.16	3.79	1.31

"Pre - Post" Effect Sizes for students' Motivational Orientations

	means (*M*)			
Measure	**pre**	**post**	**within *SD***	**Effect Size**
intrinsic goal orientation				
LSG1	5.38	5.35	0.90	-0.03
RG1	5.38	5.20	0.96	-0.19
extrinsic goal orientation				
LSG1	5.58	5.20	1.11	-0.34
RG1	5.44	5.06	1.08	-0.35
task value				
LSG1	6.10	5.99	0.74	-0.15
RG1	6.11	5.84	0.81	-0.33
control of learning beliefs				
LSG1	5.84	5.74	0.80	-0.13
RG1	5.63	5.81	0.91	0.20
self-efficacy learning & performance				
LSG1	5.42	5.28	0.83	-0.17
RG1	5.38	5.31	0.91	-0.07
test anxiety				
LSG1	4.05	3.77	1.31	0.21
RG1	3.79	3.75	1.42	0.03

Note. LSG1 n = 43; RG1 n = 85. Positive values indicate higher post than pre values except for test anxiety where a positive value indicates a lower post than pre value (as the treatment reduced the learning pathology, namely test anxiety, it was considered to have had a positive effect).

Appendix 4.5

"Pre - Post" effect sizes for students' State and Trait Anxiety

Measure	means (*M*)		within *SD*	Effect Size
	pre	post		
state anxiety				
LSG1	42.97	44.82	13.10	-0.14
RG1	41.10	39.30	13.29	0.13
trait anxiety				
LSG1	42.21	42.26	10.28	0.01
RG1	40.38	40.98	10.40	-0.06

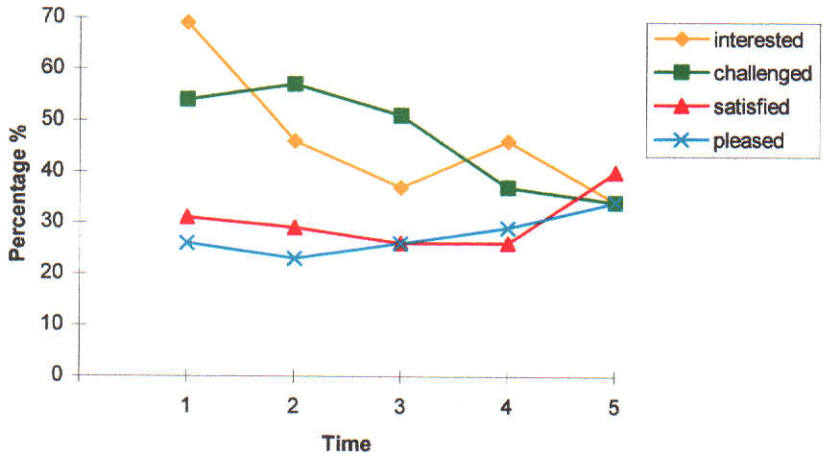
Note. LSG1 $n = 38$; RG1 $n = 80$. Positive values indicate a lower post than pre value (as the treatment reduced the learning pathology, namely anxiety, it was considered to have had a positive effect).

Appendix 4.6

Number of students (n = 15) rating in the interviews 14 learning strategies included in the learning support program in Semester 1, 1995

	Percentage (n = 15)			
Strategy	4 great	3 some	2 little	1 no
Goal setting	8	5	2	0
Completing the calendars	9	4	0	2
Project preparation sessions	13	2	0	0
5-by-3 writing model	2	8	4	1
Essay draft	14	1	0	0
Numbered feedback sheet	13	2	0	0
PQ4R reading strategy	2	4	1	8
Summaries of the chapters before the tests	10	4	1	0
Discussing how to prepare for the tests	5	7	3	0
The handouts 'How to prepare for a test' and 'How to take a test'	4	10	0	1
Discussing anxiety management before the test	5	6	4	0
Being asked "What did I learn today?"	7	7	1	0
Working / discussing in small groups	11	4	0	0
Instructor focussing on assisting us to learn	9	6	0	0

Appendix 4.7



Affect adjectives consistently circled the most on the AACL by LSG1 students on 5 occasions in Semester 1, 1995.

Appendix 4.8

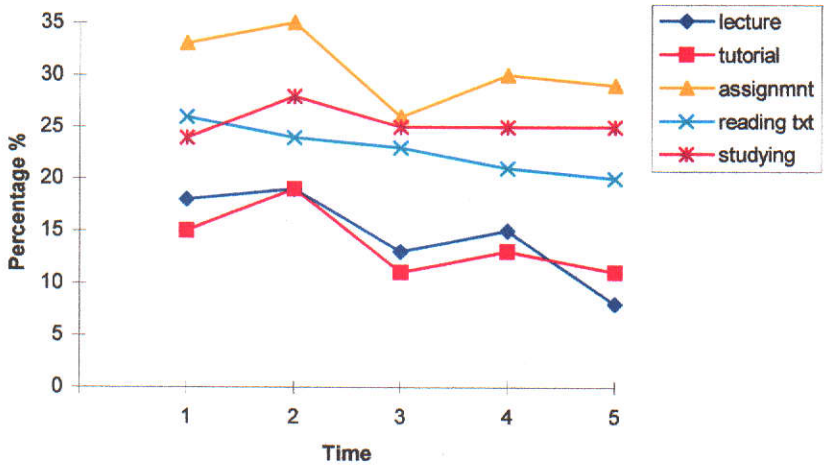
LSG1 mean anxiety scores on the Zuckerman checklist and confidence worry and discomfort scores on the Perceptions questionnaire administered on 5 occasions during semester 1, 1995

	percentage				
Affect	**week 5**	**week 7**	**week 10**	**week 13**	**week 15**
anxiety	9	10	9	9	10
confidence	67	64	61	65	66
worry	38	42	34	36	34
discomfort					
lecture	18	19	13	15	8
tutorial	15	19	11	13	11
assignment	33	35	26	30	29
text	26	24	23	21	20
studying	24	28	25	25	25

Note. Maximum score for confidence, worry, and discomfort = 100%, and for anxiety = 20.

In week 7, students completed a short answer test. Completing the test appeared to be associated with a decrease in students' reported feelings of confidence and an increase in their feelings of worry and anxiety. In week 10, students had a project preparation session which focussed on assisting them to complete their second writing assignment. This session appeared to be associated with a decrease in their levels of confidence and a decrease in their levels of worry. In week 13, the tutorial included a focus on studying for the final examination and appeared to be associated with an increase in students' feelings of confidence and their worry. In week 15 students completed the final examination. Completing the examination appeared to be associated with an increase in students' levels of confidence, a decrease in their levels of worry and an increase in their feelings of anxiety.

Appendix 4.9



LSG1 mean discomfort scores when; attending a lecture, attending a tutorial, completing a writing assignment, reading the text, or studying, as measured by the Perceptions survey on 5 occasions in Semester 1, 1995.

Appendix 5.1

"Pre - Post" Effect Sizes for Learning Strategy use by Students

Measure	means (*M*) pre	means (*M*) post	within *SD*	Effect Size
rehearsal				
LSG2e	5.63	5.62	0.81	-0.01
LSG2r	5.29	5.49	1.17	0.17
RG2	5.12	5.00	1.14	-0.10
elaboration				
LSG2e	5.28	5.34	0.74	0.08
LSG2r	5.52	5.92	0.63	0.62
RG2	5.26	5.25	1.12	-0.01
organisation				
LSG2e	5.59	5.72	0.88	0.15
LSG2r	5.01	5.21	1.02	0.19
RG2	4.96	5.17	1.11	0.19
critical thinking				
LSG2e	4.15	4.25	0.86	0.11
LSG2r	4.21	4.24	1.04	0.03
RG2	4.58	4.40	1.28	-0.14
metacognitive self-reg				
LSG2e	4.64	4.54	0.65	-0.15
LSG2r	4.45	4.59	0.78	0.18
RG2	4.51	4.47	0.86	-0.05
time & study environ				
LSG2e	4.93	5.02	0.90	0.10
LSG2r	5.08	5.20	0.76	0.16
RG2	4.83	4.61	0.99	-0.22
effort regulation				
learning support 1	4.97	4.77	1.15	-0.17
learning support 2	4.95	5.05	1.20	0.08
RG2	4.54	4.38	1.36	-0.12
peer learning				
LSG2e	3.57	4.06	1.59	0.30
LSG2r	3.65	4.07	1.18	0.35
RG2	3.41	3.70	1.39	0.21
help seeking				
LSG2e	3.92	4.15	1.32	0.17
LSG2r	5.01	4.93	1.07	-0.07
RG2	4.22	4.45	1.28	0.18

Note. LSG2e $n = 17$; LSG2r $n = 20$; RG2 $n = 46$. Positive values indicate higher post than pre values.

Appendix 5.2

Number and Percentage of students mentioning the origins of the learning method they used when learning for the tests and the examination, and when completing the writing task

	tests			examination			writing task		
Origin	LSG2e	LSG2r	RG2	LSG2e	LSG2r	RG2	LSG2e	LSG2r	RG2
School									
'History'	0	0	1(13)	0	0	1(13)	0	1(25)	0
'Social Studies'	1(13)	0	1(13)	0	0	0	1(13)	0	0
'Mathematics'	0	0	0	0	0	1(13)	0	0	0
'Economics'	0	0	1(13)	0	0	0	1(13)	0	0
'No subject'	5(63)	3(75)	4(32)	5(63)	1(25)	4(50)	5(63)	0	4(50)
Total	6(75)	3(75)	7(88)	5(63)	1(25)	6(75)	7(88)	1(25)	4(50)
University									
'Ed101'	3(38)	0	0	1(13)	0	0	0	0	1(13)
'Ed102'	1(13)	2(50)	0	3(38)	0	0	3(38)	2(50)	0
'Other unit'	0	1(25)	0	0	1(25)	1(13)	0	1(25)	0
'Uni general'	0	1(25)	3(38)	1(13)	1(25)	1(13)	0	1(25)	1(13)
Total	4(50)	4(100)	3(38)	5(63)	2(50)	2(25)	3(38)	4(100)	2(25)
Other									
'Peers'	0	0	0	1(13)	0	1(13)	0	0	1(13)
'Mother'	0	0	0	0	1(25)	0	0	0	0
'Study course'	0	0	1(13)	0	1(25)	0	1(13)	0	0
'Tutor'	0	0	0	0	0	1(13)	0	0	0
'Trial & error'	0	0	0	2(25)	1(25)	2(25)	4(50)	0	4(50)
'Unsure'	0	0	1(13)	0	0	1(13)	0	0	0
Total	0	0	2(25)	3(38)	3(75)	5(63)	5(63)	0	5(63)

Note. LSG2e $n = 8$, LSG2r $n = 4$ and RG2 $n = 8$. Total numbers may exceed the sample number because some students attributed specific aspects of their method to different origins, for example:

> "I just think I learned what fits, I learned to do the way it fits in with the sort of books we've got and the course outlines that we've got as well [coded as uni general]... and ...I remember we still used that discussing it with each other sort of before the exam, I learnt that this year in Ed101 [coded as Ed101]" [S202]

Appendix 5.3

"Pre - Post" Effect Sizes for Motivational orientations

Measure	means (*M*) pre	post	within *SD*	Effect Size
intrinsic goal orientation				
LSG2e	5.10	5.32	0.75	0.29
LSG2r	5.14	5.00	1.15	-0.12
RG2	5.02	5.00	0.96	-0.02
extrinsic goal orientation				
LSG2e	5.43	5.28	1.10	-0.13
LSG2r	5.19	4.90	1.54	-0.19
RG2	4.94	4.67	1.20	-0.22
task value				
LSG2e	5.87	6.32	0.71	0.62
LSG2r	6.14	6.15	0.65	0.02
RG2	5.54	5.31	1.21	-0.19
control of learning beliefs				
LSG2e	5.77	6.20	0.58	0.73
LSG2r	5.60	5.88	0.93	0.30
RG2	5.85	5.70	1.00	-0.15
self-efficacy learning & performance				
LSG2e	5.07	5.23	0.89	0.18
LSG2r	5.51	5.46	1.04	-0.05
RG2	5.04	5.18	1.16	0.12
test anxiety				
LSG2e	3.98	3.56	1.39	0.30
LSG2r	3.87	3.67	1.73	0.11
RG2	3.83	3.78	1.49	0.03

Note. LSG2e n = 17; LSG2r n = 20; RG2 n = 46. Positive values indicate higher post than pre values except for test anxiety where a positive value indicates a lower post than pre value (as the treatment reduced the learning pathology, namely test anxiety, it was considered to have had a positive effect).

Appendix 5.4

"Pre - Post" effect sizes for students' State and Trait Anxiety

Measure	means (*M*) pre	means (*M*) post	within *SD*	Effect Size
state anxiety				
LSG2e	46.40	43.53	11.24	0.25
LSG2r	40.44	37.17	13.41	0.24
RG2	42.02	44.57	11.70	-0.22
trait anxiety				
LSG2e	42.13	40.60	10.08	0.14
LSG2r	39.56	39.22	13.03	0.03
RG2	41.95	44.00	11.69	-0.17

Note. LSG2e n = 15; LSG2r n = 18; RG2 group n = 42. Positive values indicate a lower post than pre value (as the treatment reduced the learning pathology, namely anxiety, it was considered to have had a positive effect).

Appendix 5.5

Mean percentage confidence, worry and discomfort scores at the end of Semester 2,1995

Measure	*M*	*SD*
confidence		
LSG2e	57.12	20.71
LSG2r	63.75	21.71
RG2	57.21	26.93
worry		
LSG2e	38.24	32.30
LSG2r	37.65	28.77
RG2	38.65	26.96
discomfort lecture		
LSG2e	17.06	22.08
LSG2r	10.00	16.22
RG2	21.83	27.49
discomfort tutorial		
LSG2e	6.47	10.57
LSG2r	5.75	12.28
RG2	25.69	32.87
discomfort assignment		
LSG2e	34.12	22.17
LSG2r	45.68	33.21
RG2	42.98	26.16
discomfort reading text		
LSG2e	25.00	21.87
LSG2r	31.25	30.17
RG2	30.95	29.68
discomfort studying		
LSG2e	31.76	31.52
LSG2r	32.50	28.86
RG2	30.85	32.11

Note.. LSG2e n = 16; LSG2r n = 19; RG2 n = 41.

Appendix 5.6

Number and percentage of LSG2e students (n = 8) rating in the interviews 15 learning strategies included in the expanded learning support program in Semester 2, 1995

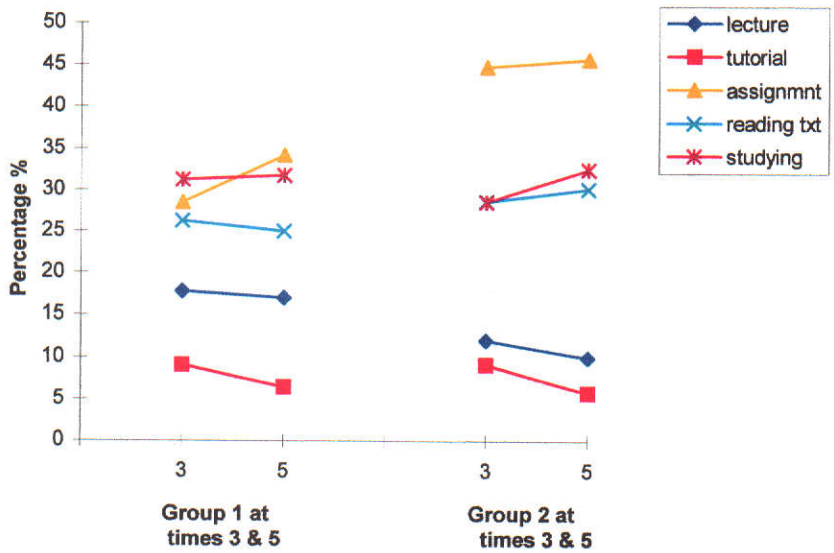
	Percentage (n = 15)			
Strategy	4 great	3 some	2 little	1 none
Essay draft	7(88)	1(12)	0	0
Tutorial relying on me doing summary	7(88)	1(12)	0	0
Instructor focussing on assisting us to learn	7(88)	1(12)	0	0
Completing the calendars	7(88)	0	1(12)	0
Summaries of the chapters before the tests	7(88)	0	1(12)	
Numbered feedback sheet	6(75)	2(25)	0	0
Working / discussing in small groups	6(75)	2(25)	0	0
Using the summary outline	6(75)	2(25)	0	0
Being asked "What did I learn today?"	5(63)	3(38)	0	0
Being rewarded for completing the summary	5(63)	2(25)	1(12)	0
Discussing in small groups how you did your summaries	5(63)	1(12)	2(25)	0
Completing the tasks to be completed lists	3(38)	3(38)	1(12)	1(12)
Being shown the 6 rules of summarisation	1(12)	4(50)	2(25)	1(12)
Goal setting	2(25)	6(75)	0	0
Summary Checklist	0	3(38)	4(50)	1(12)

Appendix 5.7

LSG2e students' (n = 16) mean anxiety scores on AACL and confidence, worry and discomfort scores on the Perceptions survey during Semester 2, 1995

	percentage				
Affect	**time 1**	**time 2**	**time 3**	**time 4**	**time 5**
anxiety	9.06	10.12	9.19	9.75	9.47
confidence			69.69		57.12
worry			33.13		38.24
discomfort lecture			17.81		17.06
discomfort tutorial			9.06		6.47
discomfort assignment			28.44		34.12
discomfort text			26.25		25.00
discomfort studying e			31.25		31.76

Note. Maximum score for confidence, worry, and discomfort = 100% and for anxiety = 20.



Learning support groups' mean discomfort scores when; attending a lecture and a tutorial, completing a writing assignment, reading the text, or studying, on two occasions in Semester 2, 1995.

Appendix 5.8

Number and percentage of LSG2r students (n = 4) rating in the interviews 14 learning strategies included in the repeated learning support program in Semester 2, 1995

	Percentage			
Strategy	4 great	3 some	2 little	1 no
Essay draft	4(100)	0	0	0
Completing the calendars	4(100)	0	0	0
Numbered feedback sheet	4(100)	0	0	0
Working / discussing in small groups	4(100)	0	0	0
Discussing time planning	4(100)	0	0	0
Being asked "What did I learn today?"	4(100)	0	0	0
Goal setting	3(75)	1(25)	0	0
Discussing how to prepare for the tests	2(50)	2(50)	0	0
Completing the tasks to be completed lists	2(50)	1(25)	0	1(25)
Summaries of the chapters before the tests	1(25)	3(75)	0	0
The handouts 'How to prepare for a test' and 'How to take a test'	1(25)	3(75)	0	0
Instructor focussing on assisting us to learn	1(25)	3(75)	0	0

Top 10 learning support strategies included in the repeated learning support program as rated by LSG2r students (n = 22) on the SATL expressed as percentages

	Percentage	
Learning support strategy	**SA**	**SD**
Submitting a first draft helped me improve my essay writing	89	0
Working in small groups in the tutorials was a good way for me to learn	86	0
The numbered feedback sheet was a good way to give me feedback	79	5
Having tutorial activities that relied on me doing the reading helped me learn	73	0
I found discussing how to survive at university useful	73	5
Discussing time planning was useful	73	5
Asking 'What did I learn today?' was a good strategy*	68	5
Having to write summaries for homework before the tests helped me learn	67	0
The handouts (Study strategies, How to study for a test, How to take an exam) were useful to me	64	5
Completing the 'tasks to be completed list' after the semester break helped me organise my work (and) Completing the calendar at the beginning of the semester helped me plan my work	59	5/8

Also, in the interview, students specifically commented that the focus on learning in Ed102 in comparison to other courses, helped them learn:

> *"...Ed102 were very different from other units...because it was more focussed on the learning not just the content, it was concerned on learning as a whole, learning knowledge that you could apply to other subjects and in the real world and it was also a lot of communication, a lot of reflection and the lecturer was there to help you and not just cram you full of.... We learnt a lot..."* [$S_2$12]

Appendix 5.9

Change in students' (n = 21) MSLQ metacognitive score and their overall achievement in Ed101

	Achievement in Ed101		
Change in meta score	high above 80%	medium 60% - 80%	low below 60%
up	4	1	
down		3	1
same	7	5	

Change in students' (n = 20) MSLQ metacognitive score and their overall achievement in Ed102

	Achievement in Ed102		
Change in Meta score	high above 80%	medium 60% - 80%	low below 60%
up	3	4	0
down	3	2	0
same	4	4	0

Appendix 6.1

At the end of Semester 1, 1995, a total of 138 students completed the compulsory final end of course test in the core Educational Psychology Ed101 Growth and Development course. Of the 138 students, 45 were from the learning support group, and 93 were from the regular group. At the end of Semester 2, 1995, 115 students completed the end of semester course test in the follow up core course Ed102 Theories of Learning. Of the 115 students, 40 were in the learning support group and 74 in the regular group in Semester 1. Thus, five of the 45 students who were in the learning support group and 19 of the 93 who were in the regular group in Semester 1 did not complete the Ed102 course final test at the end of Semester 2. An investigation of the reasons why the five students who were in the learning support group withdrew revealed that two went overseas, two changed courses, and one went back home to the country. No details were available as to why the 19 students who were in the regular group in Semester 1 withdrew.