

Science and Mathematics Education Centre

**A CHANGE MANAGEMENT PERSPECTIVE OF THE ADOPTION
AND IMPLEMENTATION OF AN ACROSS THE CURRICULUM
LITERACY INNOVATION**

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CHAPTER 1

INTRODUCTION OF THE STUDY

1.1 Introduction

Literacy is a foundational skill for life because it gives access to information and underpins communication. Learning is inextricably linked to processing information and being able to communicate in a variety of forums and modes is a necessary requirement for employment. Indeed, society requires schools to develop students' literacy skills so that they can become functional members of society and participate in the democratic process (Bloome, 1997; Christie, 1990; Peach, 1998). For example, in the last decade, there has been a growing concern that the standards of literacy in Australian schools is below a standard that is required for the country to compete in the global market place (Ashdown, 1998; Brock, 1998).

Problems call for solutions. In a climate where there is a perceived literacy problem, there will be a search for innovations that address the needs of students. Morris and Stewart-Dore's (1984) *Effective reading in content areas* (ERICA) incorporates a strategy underpinning many of the innovations related to literacy that have appeared in Australia in the last decade and a half. This study has sought to investigate the process undertaken by one school as it made the decisions to adopt and implement the ERICA strategy.

1.2 Purpose

The purpose of this ethnographic study (LeCompt & Priessle, 1993; McMillan & Schumacher, 1993; Woods, 1986) was to investigate the adoption and implementation of the ERICA strategy by a Western Australian government secondary school. An educational change framework, based on the initial work of Fullan (1982) and expanded with reference to the effective schools and other literature, was used to guide the investigation which attempted to achieve two main goals. The first goal was to identify the effective steps that a school could take in the adoption and implementation of an across-the-curriculum approach to improving writing

competence. The second goal was to identify the principles and the processes that would make the adoption and implementation of any educational innovation more effective.

1.3 Background

Change management as a field of study (Cacioppe, 1997; Coombs, 1988; Robbins, 1994) can be applied to education (Fullan, 1982; 1993; Knoop, 1987; Newton & Tarrant, 1990; Popkewitz, 1988a; Zakariya, 1988), and the principles can be used to guide the processes of adopting and implementing a school-based innovation. Chapter 2 of this study reviews the literature related to educational change management and effective schools.

Some researchers see the process of change as passing through stages in a cyclic manner (Lewin, 1951; Fullan, 1982; Knoop, 1987) while others see the change process as so complex that it cannot be viewed as a sequential process passing through pre-determined stages until a desired outcome is reached. The latter researchers view change as the outcome of the interaction of various change principles that eventually produce an outcome that was entirely unpredictable (Fullan, 1993). These two positions do not have to be mutually exclusive. Good planning would take account of the various stages, but would not presume the outcome within each stage to be predictable; rather, the actions taken within each stage would be guided by an understanding of the change principles.

The effective schools research (McGaw, Piper, Banks, & Evans, 1993; Scheerens, 1997; Townsend, 1997) adds another dimension to the notion of educational change management. A consideration for the adoption of a proposed innovation presupposes a need for a better state of operation. The effective schools research attempts a description of that better state and provides a framework to give direction to the change process within a school.

Chapter 3 reviews the literature that underpinned the educational change management framework used in this study. The work of Fullan (1982) is melded with the effective

schools research (McGaw, et al., 1993; Scheerens, 1997; Townsend, 1997) and supported with additional literature. This framework attempts to identify characteristics that need to be considered when contemplating the adoption and implementation of an innovation and is build around four broad areas identified by Fullan (1982), namely, the characteristics of the innovation, the school, the governing body and the external environment.

The framework was used as a tool to guide the analysis of the adoption and implementation of the ERICA (Morris & Stewart-Dore, 1984) strategy in a secondary high school in Western Australia. ERICA has four stages (preparation, engagement, organization and translation) and aims to develop effective readers of content-based literature. The study focused on the translation stage where students are expected to re-write concepts in their own words. This focus on writing follows the notion that writing is a powerful learning strategy (Christie, 1990; Emig, 1977; Peach, 1988) - a notion explored to a greater depth in Chapter 3. Since the translation phase ends the ERICA sequence, its attainment would be an indicator of success of the strategy. Hence, improvement in student writing competence was used as an indicator of the effect that ERICA had on students.

This study, with its description of the adoption and implementation of ERICA in a government high school, needs to be placed in a historical perspective. Prior to 1990, the literature suggested that attempts at establishing whole school approaches to developing writing competence in secondary schools had not been very successful (Hamilton-Wieler, 1987; Havel, 1986; Morris & Stewart-Dore, 1984). Whole school approaches had recognized that all teachers had a part to play in the development of student writing competence (Bergoff, Harste & Leland, 1997; Karcher, 1988; Knudson, 1986; Prain, 1995), but overburdening the English Department with the responsibility of getting the "Whole School Approach to Writing" programs started was seen as a wrong approach (Bishop, 1987; Hamilton-Weiler, 1986; Smith, 1988). Factors such as the fear of change in general and a dread of inservice training are factors that mitigated against teachers of disciplines other than English participating in the whole-school approaches.

The educational process was seen as underpinning a society's social organization, especially when individuals need to be literate to participate effectively in the workforce and to engage fully in democratic processes (Christie, 1990). According to Christie (1990), to be literate in the contemporary world is to understand the very large range of written forms, or genres, that exist for both reading and writing. Furthermore, in creating the various genres, individuals learn to exercise choices that enable them to work for changes within the culture (Christie, 1987; 1988; 1990).

In placing this study in a historical context, it was necessary to trace the development of the link between literacy and economic growth. This link gained strength in the mid 1980s when moves were made to establish an Australian national curriculum premised on the proposition that the country's economic performance was inextricably linked to education (Australian Education Council, 1989; Breare & Millikan, 1988; Dawkins, 1987; Jones, 1986). The Karmel report (1985) described some of the changes in the Australian economy between the mid seventies and 1985. Employment in manufacturing has fallen sharply and agriculture continued its long term decline as a source of employment. However, against these downward trends, the service industries had expanded. A special focus was made with regard to the impact that technology changes were having on the work place, resulting in changing the traditional boundaries of occupations and encompassing both the range of jobs within occupations and the mix of skills required within jobs. It is understandable why Dawkins (1987), the then Minister of Education, focused on a notion of transferable skills and attitudes which equip the workforce to adapt to, and influence, change. He saw that even with the best information on likely technological and structural changes, it would not be possible to predict the types and mixtures of skills that were needed in the future. Dawkins saw education as needing to focus on essential skills, such as literacy skills - especially those that related to communication and independent learning - and develop them so that the individual was flexible and able to adapt to rapidly changing circumstances.

The overall deterioration of the labour market, the level of unemployment - especially among young people - the changes in patterns of employment and the

impact of technological changes highlighted the need for broader education and training arrangements at the post-secondary level. Education and training arrangements in Australia had been based on the labour force needs of an industrial economy where there is a small minority of professional workers and highly skilled trade workers and a large majority of unskilled and semi-skilled workers. This pattern was seen as obsolete in a post-industrial economy. A much greater proportion of young Australians were seen as having to complete a broad level of secondary education as a foundation on which to build necessary occupational skills.

Following the Karmel report in 1985, there were a number of major reports focused on the link between the economy and the education system of Australia. A research team from the Faculty of Education, University of Melbourne, which was sponsored by the Australian Teacher's Federation and the Commission for the Future, produced a report entitled "Skilling the Australian Community: Futures for Public Education" (Breare & Millikan, 1988). The project leading to the report began with the assumption that if the competing demands being made on schools could be made clear and explicit, and it was possible to reconcile them, then schools would be able to respond constructively and devise more coherent plans for the future. Behind all the requests from the user groups was an apparent acceptance of the fact that the Australian society, and its place in the world, was undergoing substantial change and that urgent adjustments needed to be made. All Australians were seen as needing to understand what the new international economic order was doing to the nation and what would be the consequences of becoming a post-industrial society.

A classification of society can be made on a basis of the main form of employment. For example, employment in an agricultural society is dominated by people engaged in planting and harvesting of crops. Similarly, employment in an industrial society is dominated by people engaged in the manufacture of goods. In a post-industrial society, the manufacturing industry, and its related large-scale factory production, no longer the prime influences on employment and living patterns, however, the post-industrial society does not displace an industrial society, just as the industrial society

did not displace the agrarian society. Clearly the production of goods will be a feature of our society so long as we seek a rising standard of living. Yet these goods will be produced by fewer and fewer people.

As Australia moved toward a post-industrial society, it was anticipated that the kind of replacement - economic, social, occupational and cultural - would be far reaching because people would not be able to find jobs in the kinds of industries and firms which employed them in the past. This change was being forced on Australian society by the need to compete in the international trading arena. Across the economically developed countries, there had been a well documented shift in employment patterns and in the way countries earn their wealth (Jones, 1986). Higher profits were being made in the manufacturing industry by using comparatively fewer people. Automation, which becomes more and more sophisticated as technology grows, is responsible for the replacement of the skilled labour. Employment was to be found in sectors other than agriculture, mining and manufacturing.

According to Breare and Millikan (1988), the Australian authorities needed to realize that Australian society had a problem with its future. At the time, well over 70 percent of the country's exports were commodities - virtually unprocessed raw materials. The nation was trying to generate revenue from enterprises associated with the pre-industrial economy (like iron ore, coal and fossil fuels) when the countries with which it hoped to compete were in the post-industrial phase, generating wealth from technology, services (especially professional services in finance and investment, human services and consultancies), from enterprises like tourism and entertainment, and from the information industries (like computing, publishing, telecommunications, the electronic media, and education programs). Thus Australians seemed to be demanding a standard of living based upon post-industrial conditions, but were trying to support it with an economy based anachronistically upon industrial conditions; they wanted post-industrial living standards raised from an industrial economy.

The most obvious consequence of the post-industrial conditions was to understand that the preconceived notions of employment, careers and the workplace were in need of change. Breare and Millikan (1988) contended that there would be a need for considerable changes to occupational training programs. Post-compulsory training up until a Year 12 level was seen as becoming commonplace. Training to this level was seen as necessary for two main reasons: Firstly, higher levels of skills would be required to function properly in most jobs; secondly, there would be a need for a level of education that enabled a student to retrain when there was a change in occupation.

A second change was a need to move toward 'multi-skilling' because there was a perceived need to move away from a high degree of specialization which would leave workers vulnerable to job changes. Instead, a person would need to be trained to operate in several domains, with initial training focusing on 'generic skills' which are basic to a number of areas. A worker would start as a generalist and job specific skills would be taught in the industry. The shift in educational thinking toward a generalist approach was taken up by the Australian Commonwealth Government through the Australian Education Council (AEC) which is the forum for national collaboration. This council was comprised of the State and Commonwealth Ministers of Education and was established in 1936 (Australian Education Council, 1989, p 1).

The State, Territory and Commonwealth Ministers of Education met at the 60th Australian Education Council in Hobart in April 1989. This meeting was chaired by the Minister for Education in Tasmania, Hon Peter Rae, MHR, and it has become known as the "Hobart" Convention. Conscious that schooling of Australia's children is the foundation on which to build the nation's future, the Council agreed to act jointly to assist Australian schools in meeting the challenges of modern times. Behind this commitment to improve the educational process was the spectre of Australia's poor economic performance in the eighties. As discussed previously, rapid social and technological changes are a feature of our society. Pressures brought about by structural changes to the labour market, particularly those affecting employment opportunities for school leavers, was placing particular

demands on schools. Schools were required to respond by ensuring that their programs encompass new areas of knowledge as well as engendering in students greater creativity and flexibility and the ability to cope with change.

Ten agreed national goals, which formed the basis of this framework, were intended to assist schools and school systems to develop specific objectives and strategies, particularly in the areas of curriculum and assessment. Goal 6 was related to literacy where each state had agreed to develop student literacy skills in the areas of listening, speaking, reading and writing. However, the notion of literacy is not just restricted to Goals 6-9, but was also a key component when considering general and vocational education (Goals 4, 5 and 10). The AEC's Committee on Young People's Participation in Post Compulsory Education and training was established in 1990 (Australian Education Council, 1991). Membership of this committee was drawn from the school and Technical and Further Education (TAFE) sectors, the Commonwealth, the business community and the trade union movement, with an independent chair, Mr Brian Finn, the Managing Director of IBM Australia. The Committee produced a report (Finn, 1991) which identified six key competencies required by young people in their preparation for employment. Language and communication headed the list.

In August 1991, the AEC established a committee to undertake further development of these competencies. The committee, chaired by Mr Eric Mayer, former chair of the board of National Mutual Life Association, comprised school and TAFE representatives from all States and Territories, the non-government sector, the National Training Board and teacher unions at both school and TAFE levels. The committee presented its final report "Key Competencies" (Mayer, 1992) at the 68th meeting of the AEC in 1992. In the first section of this report, seven Key Competencies are proposed, the second of which is termed "Communicating Ideas and Information" and is defined as the capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression. At a meeting of senior officials late in 1992, it was agreed that a strategy for preparation of coordinated advice was needed. As the employment related Key Competencies were seen as an integral

part of the training reform agenda, it was considered appropriate that coordination of the extensive further research requested by the ministers should be undertaken by the working party currently engaged in developing a new Australian Vocational Certificate (AVC) system (Carmicheal, 1992). This agenda required some revision in the membership and the establishment of a subcommittee. The AVC system proposed a range of flexible pathways for young people, including school-based, vocational year, part-work, and part-study and employment-based pathways that built on the existing apprenticeship and traineeship arrangements. The pathways were seen as providing young people with key employment related and vocational competencies necessary to participate successfully in an occupation, industry or enterprise. Obviously, competency in literacy would be a significant component of the AVC.

As has been demonstrated, Australia's political and educational leaders see literacy playing a major role in their countries social and economic development. This study focused on the ERICA literacy strategy which has played an important part in the development of whole school approaches to improving literacy outcomes in Western Australian schools. It has provided the foundations for the development of across-the-curriculum thinking in relation to literacy and was one of the major forces behind the development of the Stepping-Out program (Education Department, 1996) in Western Australia. Stepping-Out is an integrative literacy strategy that was implemented in Western Australian government schools throughout the early to mid 1990s. In this study, secondary teachers of subjects such as Society and Environment, English and Science were trained in methods that sought to improve literacy outcomes across-the-curriculum. In the latter part of the 1990s, the Stepping-Out program has been subsumed into Western Australia's Curriculum Framework (Curriculum Council, 1998) which has a number of across-the-curriculum initiatives, one of which is literacy. Furthermore, the importance of literacy has been stressed from a Federal level with the recent release of the document "Literacy for all: The Challenge for Australian Schools. Hence, the ERICA strategy forms part of a historical process that has lead to the development of across-the-curriculum literacy strategies being developed in Western Australia. For this reason, it is important to place this study in its historical setting.

1.4 Research Questions

The following four research questions for this study focus on the adoption and implementation of the ERICA innovation as it impacted on the school's culture in order to bring about some changes in the activity of teachers, and as a consequence, a subsequent change in student writing competence, the final stage of ERICA whereby students translate what they have read and learnt into their own words.

1.4.1 Research Question 1. What were the significant events/ factors that led to the adoption and implementation across-the-curriculum of the ERICA strategy?

An attempt was made to capture the main events and decisions that led to the adoption and implementation of the ERICA strategy. The school level decision-making was complex and the framework described in Chapter 2 was used to analyze the various factors and events that affected the decision-making processes.

1.4.2 Research Question 2. What were the significant resisting and driving forces involved in the organizational change?

At the teacher level, the investigation tried to view the adoption and implementation processes from a change management perspective. A field analysis was conducted where the main resisting and driving forces were identified so that the process of driving the change could be described. Such an analysis is premised on the notion that the change is driven when there is a reduction in the resisting forces and enhancement in the driving forces.

1.4.3 Research Question 3. To what extent did the teachers assimilate ERICA into their teaching practice?

Various qualitative and quantitative measures were used to determine the extent to which the teachers implemented the strategy.

1.4.4 Research Question 4: Was there a significant improvement in student writing competence over the duration of the study?

In the translation phase, the students are required to “translate” their understandings into writing. Hence, writing competence was used as an indicator of the effectiveness of the ERICA strategy.

1.5 Rationale

Literacy is currently receiving attention in Australia because of the perception of poor student performances (Brock, 1998; Charles, 1999). Writing competence is an essential component of literacy because students live in an information age where writing is an essential skill for gaining access to information. Hence, writing is not only a mode of communication, but is also an important mode of learning (Christie, 1990; Dawkins, 1987; Emig, 1977; Hand, Prain, Lawrence & Yore, 1999; Karmel, 1985; Morris & Steward-Dore, 1984; Prain, 1995).

However, curriculum innovations designed to improve writing competence are difficult to implement (Gallagher, 1996; Hamilton-Wieler, 1987; Proctor, 1987) largely because the implementation of any innovation can change the culture of a school and require teachers to modify how they teach (& Aikenhead, 1998; Corbett, Firestone & Rossman, 1987; Gallagher, 1996; Marshall, 1988a). Such changes can invite resistance (Corbett et al., 1988; Cobern & Aikenhead, 1998; Duit & Treagust, 1998) and need to be carefully managed (Fullan, 1982; 1993). Consequently, developing an understanding of how to implement an innovation is just as important as the innovation itself. This study focused on the application of change management principles to the implementation of a literacy strategy (ERICA) designed to improve student reading and writing competence. The social context of study was one of disadvantage; and as a consequence, the implementation of the literacy innovation was needed, but difficult to implement. Hence, the outcomes of this study will be valuable to any school, but especially to those with a significant part of their population being disadvantaged.

This study has relevance because perceptions that literacy standards are declining in Australia has led the Commonwealth government to attempt to improve literacy outcomes in Australian schools. Consequently, a study that has explored the development of a framework, which was used to guide a school in its implementation of a whole school program for improving literacy outcomes, must be highly relevant and informative for a school or system seeking similar goals. Hence, the value of the study is not so much ERICA, but the process of identifying or developing a literacy strategy and then going through the process of implementation. Such implementations need to be managed and a change management framework for the implementation of innovations in schools must be of significant value.

1.6 Significance

Many worthwhile across-the-curriculum innovations in literacy failed prior to the 1990s (Hamilton-Wieler, 1987), attributed partly to a lack of consideration of the field of educational change management. An investigation into the process of adopting and implementing a literacy innovation (ERICA) across-the-curriculum has produced valuable data related to the management of educational change. These data have significance for two main reasons. Firstly, the study has provided valuable insights into the change management of the process of adopting and implementing a literacy innovation concerned with improving student writing competence. The focus on writing is both timely and significant because students need to develop writing skills if they are to gain meaning from and use information effectively. In this research, the innovation could not be done solely by the English Department, and the Science and the Society and Environment Departments took on responsibilities toward the overall development of student literacy. The Science Department contributed to the development of students' basic literacy skills and their understanding of writing genres within a scientific context.

The second significant aspect of the study relates to the development of a framework that can help guide administrators in the decision-making process related to the adoption and implementation of any educational innovation. This framework

identifies a series of factors related to educational change management that need to be considered when adopting and implementing an innovation.

1.7 Limitations

This study has three main areas of limitation that relate to the school, the focus on writing and the generation of the framework. The school was located in a major regional center for mining in the North West of Western Australia. This mining center had a significant indigenous population (approximately 20% of school population) and a considerable transient working population connected to the mining industry. The social setting of the school was one of disadvantage recognized with the allocation of Commonwealth Priority School Project (PSP) funds to address issues related to Students at Risk (SAR). A significant turnover of staff resulted from the isolation of the region in respect to the states' major population regions and the difficulties associated with teaching in a disadvantage school. Some of the problems of isolation can be overcome with technology and modern forms of transportation, but those related to staffing are difficult to address. The teacher turnover resulted in an inconsistent application of the ERICA strategies in the classroom and a subsequent impact on the achievement of literacy outcomes. Hence, a true measure of the longer term effectiveness of ERICA on writing competence was difficult to determine.

This study focused on writing competence as an indicator of the effectiveness of the ERICA strategy and ignored literacy outcomes such as reading comprehension. ERICA is focused on developing the skills related to the effective reading in the content areas where writing competence is a sub-component. Although many of the skills developed by the ERICA strategy would improve writing competence, there was no direct attempt in this study to have teachers directly teach a writing genre. Strategies such as the identification of a main point in a paragraph, jumbled paragraphing and assignment work would teach an understanding of the organizational aspects of writing. Other strategies would address issues related to spelling and an understanding of the relevant subject vocabulary. Hence, the reliance on writing competence as an indicator of the effectiveness of ERICA is present, but it is not as direct as one would prefer.

A theoretical framework was used to analyze the factors that affected the adoption and implementation processes (Fullan, 1982). Such frameworks have limitations because they can never reflect the true complexity of the situation being described. They can only form a guide for those planning the adoption and implementation process. Hence, the component of the study that attempted to document the factors that impacted on the process of adoption and implementation suffer from the general limitations of any ethnographic study.

1.8 Summary

Curriculum innovations are designed to address perceived weaknesses in an operating educational system. Although many of these innovations may be of great value, they may have limited effect on the classroom because they are poorly implemented. This study is both timely and significant because it focuses on a literacy innovation and studies its implementation from a change management perspective. Chapter 2 now develops the notion of a Change management framework – a tool that was used to evaluate the implementation of ERICA.

CHAPTER 2

EDUCATIONAL CHANGE MANAGEMENT

2.1 Introduction

This chapter examines the field of change management with the focus narrowing to implementation of innovations that improve the effectiveness of a school. Change does not necessarily lead to improvement, but is initiated in response to a need, an area of deficit or an identified area of low performance, where there is a recognition that operating procedures are not as effective as desired. Change processes are initiated to bring the need area into a state that can be considered more effective.

A review of the literature makes a link between school effectiveness research and educational change management and lays the foundation for the development of an educational change framework. The school effectiveness literature is used to establish the end point goals for change where a school can assess its current position and aim to move toward a defined better state. Educational change management is viewed from a perspective that there is an apparent conflict between the notion of change cycles and seeing change as a consequence of the interaction of various change principles.

Change cycles are a process that can be undertaken to move toward the better state, but it needs to be recognized that such a process is not linear and can be entirely unpredictable. Those change cycles that emanate from the research of Lewin (1951) work toward identifying resisting and driving forces and achieve change by reducing the impact of the resisting forces and enhancing the driving forces. The more recent work of Fullan (1993) suggests that those planning to implement change need to take account of change principles, with the interaction of such principles tending to be unpredictable.

The main thesis of this study is that these two positions are not mutually exclusive because a change can follow a planning cycle, but the implementation phase can be constantly monitored for the influence of change principles. This type of thinking led

to the notion of a change framework where the decision to adopt and implement an innovation is made in reference to a framework that represents the summation of the experience of those who have implemented various innovations. The work of Fullan (1982) was used as a basis for the development of a educational change framework that was used as a tool to study the adoption and implementation of the ERICA strategy.

2.2 Effective Schools

Change occurs when people are dissatisfied with their current situation and move to alter their circumstances. The effective schools research has arisen out of public perception, mainly in the USA, that the public education system is failing (Anderson & Shirley, 1995; Bjork & Gingsberg, 1995; Stringfield, Datnow, Herman & Berkeley, 1997; Verdugo, Greenberg, Henderson, Uribe & Schneider, 1997). The public is interested in the education system being in a more desirable state and the effective schools research seeks to identify elements of this state.

In relation to schooling, the public can be fickle about educational issues and pressure governments for change, or reform, when they perceive performance of schooling to be poor. For example, in the USA, there have been several recent reforms in education that were initiated by public concerns about the performance of schools. The *Nation at risk* report published in 1983 initiated a reform debate of unprecedented magnitude, especially with links being made between poor educational performances and economic decline (Bjork & Ginsburg, 1995). Much has been written about this report (Anderson & Shirley, 1995; Bjork & Gingsberg, 1995; Stringfield et al., 1997; Verdugo et al., 1997) with Stringfield et al. (1997) argue that current economic, social and political forces have combined to create a climate in which schools feel great pressure to change in order to improve students' academic achievement. As indicated by Stringfield et al. (1997) economic impetus relates to the cost to individuals and to the society when students fail to thrive academically:

Given world competition for low skilled jobs in an information age, combined with lay-offs due to advances in technologies, there is every reason to believe the jobs-related picture for ill-educated young Americans, and indeed ill-educated citizens of all economically developed

societies, will continue to deteriorate. Both at the individual and national levels, the cost of illiteracy and ignorance have become very high (pp. 6-7).

In the USA, the social or equity-based impetus arises from the disparate educational outcome that exists between whites and minority groups when students from minority groups consistently obtain lower scores on standardized tests at all educational levels. Because of the close relationship between race and socioeconomic status, minorities are likely to be educationally disadvantaged. The explanations for the variance in performance are complex, but research is showing that minority students are not offered, or given adequate, equal opportunity to learn in the current structure of American public schools. Hence, there are social and equity-based calls for school restructuring.

A political impetus arises from the greater population which perceives that state run schools are providing an inadequate education for particular groups of students, but are believed also to be deficient in certain respects for all students. Consequently, this concern has led to a push for increased parental choice in education and even privatization of state education. Matthews (1997) sees that the very legitimacy of the state school system in the USA is at stake as "there is a great many people who don't believe the public schools are their agents, who don't believe the public schools are responding to their concerns"(p. 741).

The perception that the state schools are failing has spurred on many politicians and policymakers to link school accountability and performance (Newmann, King & Rigdon, 1997). Drawing on evidence from the corporate world, they assume that strong external accountability will impel schools to improve student achievement. Newmann et al. (1997, p.41) contend that three issues keep this popular theory working in practice, namely: implementation controversies around standards, incentives and constituencies; insufficient efforts to organize human, technical, and social resources of a school into a collective enterprise; and failure to recognize the importance of internal school accountability.

However, this situation is far from simple; if the accountability efforts fail, what will improve state schools so that citizens own and support them? There needs to be purpose given to the change process because people accept change if they see it as being beneficial and leading somewhere. For small scale projects, clear goals and directions can be set. However, the notion of creating a set of goals that will lead to the creation of public schools that are seen as legitimate by the general state may not be achievable (Matthews, 1997). A partial solution is the notion of an effective school and this has received considerable attention in the USA during the past ten years.

Although the goal of defining an effective school may seem elusive, researchers have attempted to identify the factors that contribute to effectiveness (Anderson & Shirley, 1997; Fullan, 1983; Holmes & Wynne, 1989; Lawton, 1986; McGaw et al. 1993; Newmann et al., 1997; Parish & Krueger, 1987; Stringfield et al., 1997; Townsend, 1997; Wynne & Ryan, 1993). In this study, the factors leading to, or the characteristics of, an effective school are drawn from the work of McGaw et al. (1993), but are supplemented by the work of others. These factors are a relevant, coherent and inclusive curriculum, a central focus on learning, high expectations, student welfare, committed and professional staff, professional development, parental involvement and improvement plans. Each of these are now discussed.

2.2.1 A Relevant, Coherent and Inclusive Curriculum

The curriculum is what is formally studied by students in schools and there are many models of curriculum, each being underpinned by certain beliefs and values (Hill, 1994). However, irrespective of the model or theoretical base to a curriculum, its effectiveness largely comes from being relevant, coherent and inclusive (McGaw et al., 1993). The curriculum needs to be seen by students as a challenging and worthwhile activity (Townsend, 1997).

2.2.2. A Central Focus on Learning

In order to be an effective school, it is generally acknowledged that a school should have a central focus on learning and provide a climate that is conducive to it. Scheerens (1997) discusses instructional effectiveness in terms of factors such as student aptitude, opportunities to learn, perseverance, quality of instruction and the ability to understand instruction. Alternatively, Townsend (1997) suggests an academic focus where the curriculum materials, instructional methods and assessment procedures within the school are all closely aligned to the basic academic goals that the students are expected to accomplish. He also suggests that this can only occur in a safe and orderly environment where teachers use strategies that will inspire students to learn. Students should feel safe from physical harm, know and understand the discipline policy, and that rule enforcement will be fair and consistent, what Johnson, Johnson, Stevahn & Hodne (1997) describe as a safe school.

2.2.3 High Expectations

An effective school should have high but realistic expectations of its students, with the active pursuit of their potential and the attainment of their personal best. In some schools, staff and parents believe that students have the capacity to succeed, and also that staff and parents involvement is a critical factor in student achievement (Townsend, 1997).

2.2.4 Student Welfare

An effective school should have a concern for student learning and welfare and include the early identification of learning difficulties and the provision of remedial or other appropriate assistance directed at correcting those specific difficulties (Townsend, 1997). Wong (1994) argues for linking governance reform to schooling opportunities for the disadvantaged.

2.2.5 Committed and Professional Staff.

An organizational culture characterized by collaborative decision-making and effective educational leadership is a feature of an effective school. In some schools,

the principal acts as the academic and administrative leader, effectively communicating the goals of the staff, parents, students and community (Townsend, 1997) and providing encouragement for teachers to participate in decision-making. Indeed, teachers are seen as needing to take responsibility for, and being involved in, school planning and curriculum development (Newmann et al., 1997; Townsend, 1997). To accomplish this, each teacher should be well trained and show the skills involved in quality teaching, care about students and their success in school, work as a team member and exhibit a positive morale and enthusiasm for work (Newmann et al., 1997; Townsend, 1997).

2.2.6 Professional Development

An effective school should have as a focus the ongoing professional development of its staff (Newmann et al., 1997; Stringfield et al., 1997; Townsend, 1997). By offering high quality professional development programs teachers can be encouraged to perform at higher levels (Newmann et al., 1997; Townsend, 1997). However, such programs need to be based on identified school goals and involve the entire staff and other appropriate people (Townsend, 1997).

2.2.7 Parental Involvement

Effective schools are those where parents are made welcome and shown that they are appreciated (Townsend, 1997) and where processes are in place that involve and engage parents (Wadsworth, 1997). Involvement encompasses such things as encouragement for parents to assist their children at home, participation in school activities and their involvement in decision-making (Townsend, 1997). Engagement presupposes a collaborative process where individuals and groups think through issues together in a struggle to arrive at solutions which all can accept. Without engagement, there is potential for the gap between the experts, who create solutions to societal problems, and citizens to widen to such a degree that the state schools lose their legitimacy (Wadsworth, 1997) and the parents start to withdraw their children from the state run schools. Wadsworth (1997, p. 752) proposes seven principles by which schools can engage the public: begin by listening; create an on-going process; go

beyond usual expectations; provide choices; don't ignore obstacles; avoid jargon; and communicate productively.

2.2.8 Improvement Plans

The final feature of an effective school is one in which an ongoing process of evaluation and review contributes to a clear and targeted plan for improvement. This plan should focus on bridging the gap between current reality and a finite number of goals (Stringfield et al., 1997), including monitoring student progress in order to evaluate the success of steps taken to improve student performance (Townsend, 1997). Hence, the plan would initiate changes in the fundamental relationships between students, teachers and curricula and, if successful, the proposed changes need to be supported at the school level (Stringfield et al., 1997).

2.3 Management of the Process of Educational Change

While effective schools research provides the end-point goals of educational change and helps to establish a vision for growth, achievement of these goals is dependent on an educational change process. The management of this process is described below in four sections, namely, the types of changes that occur in schools, the process of change, the dilemmas of change, and the principles of change. This section completes the foundation that is needed to establish the educational change framework that was used to evaluate the ERICA strategy adopted and implemented in a state secondary high school in Western Australia.

2.3.1 The Types of Changes that Occur in Schools

Any system that is complex can be broken down into sub-parts and in the 1980s, various authors attempted to classify the types of changes that occurred in schools. Johnston & Neidermeier (1987) viewed change in terms of three broad categories of variables - structural, procedural and attitudinal - made most frequently by respondents. Structural variables include leadership, state-provided finances and human resources; procedural variables included time, organization of implementation

activities, informational resources (curriculum models and materials) and assistance (technical and procedural advice and information) from the state Department of Education; attitudinal variables mainly typified negative responses to such things as top-down policy making, the State Department of Education and toward change in general. Other attitudinal factors, such as the internal politics of the school, can affect change and when teachers have negative attitudes toward each other, there is a negative impact on change.

In classifying types of changes that occur in schools, Olsen (1985) describes system, ecological and reflective changes. System changes also can be referred to as bureaucratic changes: the belief that people will act according to system plans; and if they do not, the nature of the system will be adjusted to improve the link between input, namely decisions, and output, namely what happens in the classroom. A measure of an innovation's success is not how people think and feel, but what they do in relation to it. Ecological changes relate to the conditions under which teachers work and how their situation determines what they do. If administrators appreciate the complex social situation of the teacher's practice, they will be in a better position to make good policies for change. With reflective notions of change, a belief is held that teachers do act rationally, do tend to solve problems that confront them, but they are not always conscious of how they do things. Change occurs when teachers become aware of how to solve problems and measure the cost of change as they begin to subject their practice to critical scrutiny. Teachers' behaviours reflect how they accommodate conflicting demands and resolve dilemmas inherent in their work. This view sees teachers as moral agents who are able to determine right from wrong. In other words, a new idea that is viewed as correct when it is able to be accommodated into a teacher's set of paradigms, but wrong when it is seen as impractical and unworkable and cannot be accommodated.

Yet another way of classifying changes is made by Knoop (1987) who suggests four types of changes: administrative; curriculum and program ; human resource; teaching and learning processes. Administrative changes include policies, objectives, operating procedures and reward systems and curriculum and program changes relate to a school's educational technology. Human resource changes relate to the staff and their

interactions and include attitudes, beliefs, knowledge and skills and expectation and needs. Teaching and learning process changes are concerned with interpersonal and group interactions between teachers and students, including methods of teaching, relations and communicating. Two approaches for dealing with Knoop's four types of changes include structural approaches to change that consist of administrative and curriculum and program changes, and process changes involving people and the interactions that occur during teaching and learning.

2.3.2 The Processes of Change

The second aspect of educational change relates to the process of change in schools. Lewin (1951) saw change as a process of identifying the status quo and determining its relationship to a new and arguably better state. Moving to this new state required identifying the resisting forces (those factors which would impede the change) and the driving forces (those factors that support the change). Planning the change required working to reduce the resisting forces and enhancing the driving forces. Once the change had been implemented, a process of consolidation (re-freezing) was to be undertaken. There are numerous applications of Lewin's model of change that have been applied to the field of education, but this study has adopted a model for studying ends-means-effects in educational change (Owens, 1981). Owen's model is well suited to this study because the adoption and implementation of the ERICA innovation impacted the school's culture, bringing about some changes in the activity of teachers; and as a consequence, a change in student writing competence. In a general sense, culture describes the way things are in a family, organization, town, society or nation (Cobern & Aikenhead, 1998; Corbett et al., 1987) and provides the contextual clues necessary to interpret events, behaviours, words and acts, as well as giving them meaning. According to Corbett et al. (1987), the culture prescribes the ways in which people should act, regulating appropriate and acceptable behaviours in any given situation, defining what is true and good. Norms, beliefs and values define what is socially shared and the transmitted knowledge defines what is and what ought to be and provides members with a sense of continuity in the face of flux generated by students, parents, administrative changes and reform movements. Norms are benchmarks for appropriate behaviour and are not uniformly shared or uniformly open

to change. Corbett, et al. (1987) distinguish between norms that are sacred and those that are profane; the sacred norms are those that are immutable and not open to change whereas profane norms are those susceptible to change.

In the context of educational change, teachers have the reputation of being inherently and universally stubborn when facing change and their resistance to such change is largely dependent upon the fit between a school's culture and the proposed change (Carroll, 1990; Cobern & Aikenhead, 1998; Corbett et al., 1987; Gallagher, 1996). A change will be greeted with suspicion and reluctance when expectations for behaviour embedded in a new practice, policy, or program do not coincide with the existing conceptions of school life that are held by the staff. This existing conception is maintained through a process of acculturation or transmission of culture (Marshall, 1988a). Through acculturation, people learn the rules governing behaviour, the organizational climate, norms, dominant values and the informal structures. Some aspects of the culture are tangible such as visible and audible behaviour patterns and artifacts. Other aspects are tacit such as the invisible patterns of shared belief. People become acculturated when they know how to fit with shared patterns of thought, beliefs, feelings and values that result from shared experiences and common learning (Marshall, 1988a). However, acculturation maintains the status quo, whereas change management is concerned with modifying it: Unfreezing the status quo and re-freezing in a new one.

There is value in viewing the school as a culture because this notion can offer an important additional lens for understanding how teachers respond to change (Corbett et al., 1987). Acculturation also could be described as routinization (Evans, 1987) where the social activities that constitute practice are continually being re-created by agents who routinize day-to-day practices. It is this process of routinization that leads to the production of rules and resources that influence the production and reproduction of social life. The notion of acculturation can be applied to learning in the classroom (Cobern & Aikenhead, 1998; Duit & Treagust, 1988; Hand, et al., 1999)

Research studies on planned change and school improvement initiatives have documented that many curriculum innovations simply have not found their way

into the majority of classrooms (Corbett et al., 1987). The problem with most innovations in schools is that they seek to change behaviour without considering how the new meanings of the planned change impact on the meanings connected to the sacred core of the school's culture. It is understandable that threats to the sacred norms will be met with resistance, but often there is resistance when even adjustments to the profane are attempted. However, attempts to change the sacred represent attacks on the foundations of teachers' constructions of reality. Destabilizing these representations of reality can lead to identity crises amongst teachers and unclear definitions of what is and ought to be, so it is understandable that teachers respond to seemingly harmless changes with perceived irrational behaviour. A carefully planned and rational change process involving technical assistance is not likely to succeed if it attempts to change the sacred. The norms are not internalized and behavioural changes tend to disappear when the special support systems are removed. It is unlikely that changes that infringe upon the sacred will ever become routine.

Combs (1988) contends that to change people's beliefs requires creating conditions for change rather than imposing reforms. It calls for open systems of thinking rather than the closed systems to which most reformers are accustomed. A strong link between beliefs and resistance to change has been established by Hultman(1980); resistance is the state of mind reflecting unreceptiveness to change, which manifests itself behaviourally by either active opposition to change or avoidance of it. To him, the origin of resistance is understood by considering descriptive beliefs, evaluative beliefs, facts and values - these are all defined and form the basis of a resistance matrix. Overcoming resistance involves understanding the relationship that exists between a person's facts, beliefs and values. In this context, any change strategy should start with variables most receptive to change and build from there. Human behaviour is too complex for simplistic solutions. Furthermore, there is a need to avoid both irrelevant and emotionally charged variables.

As Lewin (1951) originally contended, change processes can be used to overcome resistance. Fullan (1982) described three broad phases to the change process. Phase 1 can be labeled initiation, mobilization or adoption and consists of the processes

which lead up to and include the decision to adopt or proceed with change. Phase 2 involves the implementation of the proposed change (innovation) and usually includes the first two to three years of the change involving the first experiences of use of the innovation. Phase 3 can be labeled continuation, incorporation, routinization or institutionalization. This phase is where the innovation becomes integrated into an on-going part of the system or disappears by way of decision to discard or through attrition. Since Lewin's initial work, others have suggested variations to the three phase change process (Fullan, 1985; Cacioppe, 1997; Knoop, 1987; Robbins, 1995).

2.3.3 Dilemmas of Change in Schools

A third aspect of the educational change process relates to five identified dilemmas (Crandall, Eiseman & Louis, 1986): a pedagogic versus an organizational focus; modest versus major changes; internal development versus importing innovations developed elsewhere; development of teachers versus non-teachers; replication versus adaptation.

2.3.3.1 Pedagogic versus Organizational. A pedagogic focus emphasizes what happens in the classroom; whereas, an organizational focus tries to alter school-wide variables such as school climate or a decision-making processes. The research suggests that school improvement efforts should (1) always include pedagogically focused components, (2) increase the involvement of principals and department heads as this is more likely to have a greater impact on student outcomes than efforts that focus solely upon improving the classroom performance of teachers, and (3) have a dual focus to ensure that the links between the organizational and pedagogical components are strengthened.

2.3.3.2 Modest versus Major Changes. Several large educational studies (Crandell et al., 1986) support the claim that the larger the scope and personal demands of a change, the greater the chance of success. The notion of scope is probably akin to Cerych's (1987) view that there are three dimensions to a change: depth, breath and level. The depth of change is the degree to which a new policy implies a departure from existing values and rules. Breath refers to the number of areas in which a given

policy is expected to introduce profound modifications. Level of change indicates the target of the reform: the system as a whole, a particular sector or a segment or a subunit.

Crandell et al.'s, (1986) assertion seems to contradict earlier studies (Fullan, 1982) which suggest that the more complex an innovation, the less likely it will be adopted. This apparent contradiction can be resolved as the earlier studies focused on adoption as opposed to the implementation of the change after the decision for adoption had been made. Consequently, a better generalization would be that the greater the teacher effort and energy expended in implementing a new practice, the greater the potential outcome.

2.3.3.3 Internal Development versus Importation. Educational innovations exist in plentiful numbers and according to Sparks (1988) the issue of adoption, or importation, is strongly correlated to the quality of innovation. Further, teachers do not consider the birthplace of an innovation as relevant which is counter to the assumption that locally developed innovations work best. Rather, the teachers are interested in whether the innovation passes the tests of reality and utility. In other words, although quality is difficult to assess and agree on, when educators have seen ideas rejected in the past they become more careful in making decisions about taking on unproved new change programs, especially when there is limited time and resources.

2.3.3.4 Development of Teachers versus Non-teachers. There are problems with local teachers developing innovations as opposed to non-teachers. Teachers are affected by classroom press and find it difficult to develop innovations because (1) they have a short term focus with a major emphasis on having a successful day; (2) they are isolated from adults and have few opportunity to interact meaningfully with colleagues due to their schedules and responsibilities; they have little energy by the end of the school day; and (4) they rarely engage in sustained reflection about teaching, much of their work is done intuitively and little time is devoted to reasoning about how they carry out their jobs (Crandell, et al., 1986). Consequently, although the involvement of teachers in the development of an innovation may not lead to a better state of

affairs, success can only be possible if additional resources such as release time from regular school classes and access to outside experts can be provided (Crandell et al., 1986; Gallagher, 1996).

2.3.3.5 Replication versus Adaptation. A thorough examination of an innovation is required before deciding whether or not to replicate or adapt it. When innovations are well designed (both focused and debugged) and are technically challenging, users who were permitted to make adaptations are unlikely to achieve the effects that had been achieved by the developers. In such situations, these teachers often omitted the technically challenging components that were critical to success. On the other hand, when administrators both insisted that teachers faithfully implemented well-designed and technically challenging innovations and provided appropriate support, the implementation outcomes were positive.

2.3.4 Principles of Change

The final aspect of the educational change process relates to the assertion that there are underlying factors that affect changes in schools. Fullan's (1993) later work has identified several of these factors that he terms principles and argues that the old ways of viewing change cannot adequately account for reality, namely what is faced in schools. Change processes are so complex and are influenced by so many factors that the outcome of any change process is to a degree unpredictable. Rather than impose changes, Fullan (1993) argues that we should work toward harnessing them and he describes a set of eight basic lessons that govern change that go together in a set; no one lesson by itself is useful - each must benefit from the wisdom of the other seven. The eight lessons are summarized as follows: you cannot mandate what matters; change is a journey, not a blueprint; problems are our friends; vision and strategic planning come later; individualism and collectivism must have equal power; neither centralization nor decentralization works; connection with the wider environment is critical for success; and every person is a change agent.

A similar type of thinking was used in an American schools reform project called Re:learning (Anderson & Shirley, 1995). Those schools wishing to participate had to

endorse, or show commitment to, the following nine principles: students should learn to use their minds well; schools should have simple goals; schools should have universal goals; the teaching-learning process should be personalized; students should be workers, with teachers serving as coaches; students should be able to exhibit mastery before graduating from high school; schools should be characterized by a tone of decency and mutual respect; teachers should be generalists first and foremost; and the cost of reform should not be more than 10% of the operating cost of current programs.

Fullan's change principles, the thinking behind the Re-learning project, and aspects of the notion of classifying components of a school, all parallel research related to effective schools' attempts to examine the source of a successful school and identify those factors/ principles contributing to effectiveness.

2.4 Summary

Chapter 2 has examined the literature related to the field of educational change management. An assertion is made that the main goal of educational change is to become more effective in practice. In this regard, the effective schools research has been linked to educational change management. Schools seeking to become more effective can apply cyclic models of planning, but need to take into account the notion of change principles as they engage the implementation process. A direction for a change can be set, but the final outcome of a planned change is not fully predictable. Chapter 3 builds on this notion to establish a framework to guide educational administrators as they seek to implement innovations in their schools.

CHAPTER 3 EDUCATIONAL CHANGE FRAMEWORK

3.1 Introduction

In Chapter 2, educational change was seen as a complex process. Models of change were seen to having value in guiding the educational change process, but they are not able to fully account for the complexity of the change process that occurs in schools. Those seeking to implement a change need to be aware that change principles (Fullan, 1993) are interdependent and have a net affect on any change. The author contends that there is a place for both. The models/ processes provide the structure or framework that enables the planning necessary for change and the principles inform the planning process and guide the implementation of the plan.

Realizing that change itself is complex and the way it is viewed is arbitrary, in this chapter a framework is established to assist people reviewing a proposed change or implementing an innovation. The effective schools research and other literature is used to expand the initial work of Fullan (1982) and relates to the factors affecting the implementation of an innovation, namely, the characteristics of the innovation, the characteristics of the school, the characteristics of the system, and the characteristics of the external environment.

3.2 Characteristics of the Innovation

Educational innovations exist in plentiful numbers. They become driving forces because teachers/ parents, who may have particular needs currently unmet, do not have the time, skills or resources to develop solutions. The literature suggests that teachers do not consider the birthplace of a innovation as relevant (Crandall, et al., 1986). This is counter to the assumption that locally developed innovations work best. Furthermore, these authors contend that it is not important who created the innovation, but whether it passes the tests of reality and utility. Any such test would need to assess need, clarity, complexity and practicality (Fullan, 1982).

3.2.1 Need

A need is an identified factor that influences the decision for adoption and implementation of an innovation in a school. In the past decade, educators in the United States have been involved in attempts to reform, restructure and renew schools as a consequence of the mediocre educational performance of students on a nationally organized testing program (Anderson & Shirley, 1995; Stringfield et al., 1997). In schools, teaching staff are reluctant to adopt any innovation unless they perceive it will address a need or an identified problem area (Fullan, 1982). Combs (1988, p.39) suggests that you begin an educational reform by addressing the local problems. As such problems are addressed, the confidence and support of staff for the innovation will grow.

The adoption process means there is a change in a way the school organization operates. Tichy (cited in Crandall, et al., 1986, p. 32) argues that organizations can be conceptualized as being composed of interrelated systems - technical, political and cultural. Educational problems can be classified into each of these three categories. Technical systems refer to those that affect the core structures and activities of schools, for example, problems related to pedagogy and the curriculum can involve significant technical changes. Political systems relate to the interaction of staff in the process of implementing change, for example, the problems related to adjudicating between groups involved in collective bargaining and the demands of implementing a new program are political. Cultural systems relate to the way a school operates and perceives change, for example, the problem of motivating a "burnt out" staff is primarily cultural.

Herrington (1994) describes changes in schools that have occurred as a consequence of cooperation between different government agencies in addressing social problems that exist in the greater community. Matthews (1997) describes a cultural gap that exists between government schools in the United States and the greater population and this gap has created a legitimacy crisis that is leading to an exodus of students to the private sector. Unless this gap is reduced by engaging parents (Matthews, 1997; Wadsworth, 1997) in the educational process, the very existence of state education is

at risk. Very few needs fit neatly into a single category. Thus changing the curriculum will typically raise a host of related political and cultural problems that must be dealt with if the implementation is to move forward. Those responsible for planning change need to consider the impact that technical changes will have on other sub-systems and plan to bring into alignment all of the three systems.

The staff of a school are crucial to solving local problems (McGaw et al., 1993; Newmann et al., 1997; Stringfield et al., 1997; Townsend, 1997; Wong, 1994). The staff have the capacity (Olsen, 1985, p 306), but they need to be supported as they develop the innovative solutions. If teachers are to adopt an innovation, they need time to reflect so that they can align their beliefs with those that underpin the innovation (Gallagher, 1996). When there is philosophical acceptance of an innovation, there will be a greater likelihood of implementation (Sparks, 1988) and, therefore, a greater desire to find solutions for problems that will arise during implementation. Time is also required for the teachers to think and focus on the problems. Without time, new and innovative ways of doing things will not arise. Furthermore, time is needed to investigate outside solutions to similar problems so that they may be adapted to the local setting.

3.2.2 Clarity

Clarity relates to how well a proposed change is understood. Although there may be agreement that change is needed, the adoption process may not have made clear what teachers should do differently. As there is a move from adoption to implementation, unforeseen problems and differences of understanding may arise. There is a risk that as teachers grapple with the implementation process, the intended changes will be modified to such a degree that the outcomes of the implementation do not match the original goals. Hence, much effort needs to be invested in defining the boundaries of the intended change and effort needs to be directed to ongoing clarification of the goals. Furthermore, strategies need to address the issues that arise during implementation. A lack of clarity results in diffuse goals and unspecified means of implementation (Fullan, 1982). Cacioppe (1997) contends that this lack of clarity,

especially in relation to vision and the setting of specific objectives, leads to the failure of many change programs.

The goals of an innovation need to be clear (Newton & Tarrant, 1990) and there is a need to identify models that define intended changes. For example, as previously stated, Crandall, et al. (1986) developed a model where change is viewed in relation to five dilemmas and their work can be used to make the assertion that there is a need to clarify what aspects of the change proposal need to be implemented faithfully and those that can be adapted. In addition, Bolton (1997) found that when teachers were aware of the purpose and nature of a proposed innovation, they experienced less angst and had a greater understanding of the goals and direction of the program. Crandall et al. (1986) go on to suggest that it is useful in this clarification process to identify three entities:

- Core Components. These include elements of the change that its developers believe are required if the desired changes are to be obtained.
- Related components. These are other changes that either enhance the operation of core changes or increase likelihood of achieving desired goals.
- Implementation requirements. These are the necessary resources, such as user knowledge and skills, or materials and equipment, that may be required to implement the change.

The task of classifying which aspect of change program fits into each of the three entities is much more difficult to do than one would intuitively expect. For example, identifying the boundaries of the core components is very difficult and can result in considerable debate. For this reason, Crandall et al. (1986) recommended core components of any improvement programs be clearly identified in advance and no change should be made in those programs without careful analysis of the effects of the change on goal achievement; strategic or organization wide planning should be carried out to identify any additional changes that need to be made in order to support the implementation of classroom-focused changes; and early planning should explicitly identify both short and long term resources that will be needed to maintain change program.

As the implementation progresses, there needs to be an emphasis on people and not methods (Combs, 1988). Teachers need the opportunity to reflect (Dwyer, Ringstaff & Sandholtz, 1991) on their practice and they need assistance to clarifying underlying assumptions related to the change. Such adjustments are related to the beliefs and values of the teachers (Aquila & Galovic, 1988; Combs, 1988; Corbett et al., 1987); reflection time is needed so that the necessary adjustments of beliefs and values can occur (Firestone, 1996; Tripp, 1996). If the adjustment or accommodation of beliefs and values is not possible, then there is little likelihood that the implementation of the innovation will be successful.

Crandall et al. (1986) suggest that there is a need to clarify whether an improvement should be housed in a niche that will give it special status and high visibility or within a unit that most clearly approximates its area of activity. The advantages of giving it a special niche are that such a placement demonstrates the school's commitment to its success, protects it against early dilution and allows the project staff to tinker and experiment, free from some of the routines and red tape that encumber established units. Placing the innovation in its most probable final destination provides opportunities for support, expertise, knowledge and resources that can enhance its capabilities.

The research findings of Crandall et al. (1986) suggest that assessing need is more than merely weighing the advantages of one option over the other. Implementation success also is affected by political pressures for and against launching the innovation, by the reputation and competence of the unit that is the innovation's most likely destination and the receptivity to the innovation of key personnel in the unit, especially its head.

3.2.3 Complexity

Complexity refers to the difficulty and extent of change required by the individuals responsible for implementation. The effective schools research has demonstrated the importance of schools having simple developmental goals (Anderson & Shirley, 1995; Stringfield et al., 1997; Townsend, 1997). Even though schools need to be recognized

as complex institutions. Chubb (1988) predicted that many of the school reforms of the 1980s would fail because the efforts to improve performance were not focused on changing the way they were organized or controlled. Schools are complex organizations composed of interdependent parts, governed by well established rules and norms of behaviour that are adapted for stability. Irrespective of the framework or classification system adopted, the complexity of a change can pose problems for implementation. Simple changes are easier to carry out, but they may not make any difference. Relatively complex changes promise to accomplish more. Whether or not they do, depends on all the factors discussed in this section.

Based on Crandell et al.'s research, the greatest success of an innovation is likely to occur when the size of the change is large enough to require noticeable, sustained effort, but not so massive that typical users find it necessary to adopt a coping strategy that seriously distorts the original goals of the change. Ensuring that a balance exists between the two extremes of difficulty requires planning. When the balance swings toward the difficult, large and/or complex end of the continuum, then the plan for implementation should be incremental (Dwyer et al., 1991; Knoop, 1987).

The planning for incremental implementation needs to have clear direction or goals to be attained. Newton and Tarrant (1990) link success to the setting of objectives although the relationship between a goal and an objective is not easily defined. Indeed, Newton and Tarrant evade the issue when they distinguish between visionary and attainable objectives, the former being probably akin to a goal to which they aspire and state the end point of the intended change. Attainable objectives are those that have a time-scale for accomplishment and funds are allocated for the task of implementation.

Knoop (1987) suggests that the planning for a change should be done by a small group and that this group should conduct a widespread and intensive search for new and creative solutions to problems. Although he warns against bringing back the solutions to a large group who have not been involved in the planning process, there is a need to involve the teachers in a reflective process. Dwyer et al. (1991) support this contention and argues that reflective time is needed for teachers to consider their own

beliefs and values in relation to the outcomes of the intended change. This process can help them develop an understanding of the relationship between the outcomes, or consequences, of a change and the alternative belief systems that may be driving that change.

An incremental change can be viewed as passing through the stages of adoption, adaptation (initial implementation) and appropriation (continuation of implementation) (Bolton, 1997; Dywer et al., 1991). As teachers work their way through these stages, they increasingly need the opportunity to think about instruction and learn to confront their actions and examine their motives. Bolton (1997) considers aspects of the initial implementation, especially when an outside consultant is involved, that merit particular comment: (1) timetables need to be constructed in consultation with the classroom teachers; (2) meetings need to be provided so that there are opportunities for sharing ideas and perspectives, viewing videos, planning together and engaging in guided reflection on classroom practice; (3) time is required for teachers to begin to trust each other and to recognize that a request for help does not constitute admission of incompetence. Bolton's study showed that project duration was better over two terms than one; (4) there was a need for regular reporting; (5) planning sessions of short duration after school hours did not significantly add to teacher workloads and were considered valuable.

The factors referred to by Bolton (1997) provide the opportunity for teachers to critically reflect on the consequences of their choices, decisions and actions. As the teachers engage in an ongoing dialogue about their experiences, there is a continuous development of their ability to imagine and discover more powerful learning experiences. Teachers' beliefs and values are brought to the surface and the reflecting on past actions enables a teacher to learn from experience.

In accepting that something has been learnt, there is a notion that what works has been identified. Perhaps one of the most crucial aspects of incremental change is the success of the initial sub-parts. When the initial increment is successfully implemented, the success can sway the doubters and non-believers (Knoop, 1987), the

cost of failure is reduced and, if the experience can be repeated in successive increments, the probability of successful change is further enhanced.

3.2.4 Quality and Practicality

Quality relates to the character of a thing in relation to excellence. A quality educational program enhances students' capacity to learn and can be assessed in terms of factors such as the opportunities it provides for learning, time it keeps students on task, the provision given for feedback, the capacity to capture interest and the ability to guide (Scheerens, 1997). Usually, the quality of an educational innovation is strongly correlated with its adoption (Fullan, 1982; Sparks, 1988). Although quality is difficult to assess and agree on, educators become more careful in making decisions about taking on unproved new innovations and limited resources make educators more choosy.

Practicality is really a quality factor that relates to the ease of use. For example, the early period of computer-assisted-instruction was seen first as a panacea, and then a colossal waste of money when it failed to deliver (Fullan, 1982). One of the main reasons for this failure was due to the impracticability of the earlier programs which were mystifying and frightening to teachers and students alike.

The amount of staff training is not necessarily related to the quality of implementation (Fullan, 1982), but it can be if it combines pre-implementation training with training within implementation and uses a variety of trainers. However, most forms of inservice training are not designed to provide the ongoing, interactive, cumulative training necessary to develop new conceptions, skills and behaviour. No matter how much advance staff development occurs, it is when people actually try to implement new approaches that they have the most specific concerns and doubts. It is thus extremely important that people obtain some support at the early stages of an attempted implementation.

Similarly, the learning of new skills through demonstration and practice does not necessarily include the learning of the conceptual underpinnings necessary for lasting

use. The dilemmas and inconsistencies in trying to understand why the obvious strategy of staff development often fails are easy to resolve. Implementation, whether voluntary or imposed, is none other than a process of resocialization, the foundation of which is interaction. The processes of sustained interaction and staff development are crucial regardless of the nature of the change (Firestone, 1996; Stringfield et al., 1997; Townsend, 1997). Sustained interaction incorporates the notion of learning by doing. There are the concrete role models, the meetings with those that manage the resources, the discussions with the other implementers and the information contained in the relevant literature that all combine to assist a person to see the need and meaning of the change. It is essential to appreciate that thoughtful professional development takes time. Coaching a teacher to master a relatively simple instruction strategy takes 20 to 30 hours of studying the literature and theory, at least 15 to 20 hours observing the innovation being modeled and practicing the strategy ten to fifteen times with peers or small groups (Bolton, 1997).

3.3 School Characteristics

The second broad area to be considered in the establishment of the educational change framework relates to the impact of school characteristics on the adoption and implementation of an innovation. The effective schools research attempts to identify the characteristics of an effective school that would equate to the ideal, the desired outcome of an innovation. Hence, any planned innovation would challenge the status quo. The research findings of McGaw et al. (1993) and Fullan (1982) establish the five characteristics that affect change at a school level, namely the curriculum, the role of the principal, staff (teachers), parents and students.

3.3.1 The Curriculum

When any change is being considered for adoption, its impact on the existing curriculum needs to be considered, especially if there is to be an assessment of effectiveness (Greenfield, 1995). Any intended curriculum change needs to consider focus, delivery, structure, decision-making, content and outcomes.

3.3.1.2 Curriculum Focus. The largest category of responses in the study by McGaw, et al. (1993) is related to the central focus of providing an effective curriculum. Greenfield (1995) references recent calls to school administrators to pay more attention to the core schooling activities of teaching and learning, but acknowledges that this dimension has received little attention. Townsend (1997), in a comparative study between school populations in the USA and Australia, found that the focus of the curriculum was considered important. Australians did not see an academic focus as important as other factors such as high expectations of student standards, policy, staff, monitoring student progress and positive motivation for children. Townsends findings are consistent with McGaw et al.'s (1993) finding that the differences in expectations are a consequence of underlying tensions and competing values. For example, there was a tension between rigour and relevance with more than half of the responses nominating relevance as an essential feature of the curriculum. Similarly, in reference to the tension between change and stability, the great majority of respondents saw adaptability and responsiveness to change as an essential feature of the curriculum in an effective school.

3.3.1.3 Curriculum Delivery. A curriculum essentially represents plans for action and is only fully realized when these plans are implemented in the classroom by teachers who play a critical role. Teachers help create the safe environment that is crucial for learning (Johnson et al., 1997; Townsend, 1997) and deliver the curriculum within this environment in an effective way dependent on factors such as quality, appropriateness, incentives and time on task (Scheerens, 1997). In terms of societal views on curriculum delivery, McGaw et al. (1993) found that over one third of the responses nominated aspects related to the professional quality of teachers, the provision of resources and the quality of school organization and decision-making, as essential elements in the curriculum of an effective school. Greenfield (1995) notes that school reform and restructuring initiatives are changing the magnitude and salience of the instructional role demands in many schools. Given the increasing attention to the instructional effectiveness of schools and a growing recognition that traditional school governance and organizational arrangements often impede instructional improvement initiatives, school administrators find themselves relying

increasingly on leadership to influence teachers and initiate efforts to make schools more effective (Greenfield, 1995).

3.3.1.4 Curriculum Structure. The main structural issue to emerge in the responses from McGaw et al. (1993) was whether curriculum provision should be common to all students, or whether it should be differential to cater for a range of student needs, interests and abilities. More than a quarter of the responses addressed this issue with about half favouring curriculum diversity in opposition to about a quarter who favoured a common core curriculum. A further group argued for curriculum flexibility and represented a midpoint between commonality and diversity. Other responses addressed the important issues of the breadth and depth of the curriculum, emphasizing the need for a broad general education. One tenth of the responses contended that the curriculum be coherent.

3.3.1.5 Curriculum Decision-making. As in other countries (Lennon & White, 1997; Matthews 1997; Newmann, et al., 1997), there is much debate in Australia (McGaw et al., 1993) about the issues of autonomy and control. The tensions between centralization and devolution were reflected by about a quarter of the responses addressing the issue. Slightly more than half of these responses stressed the importance of local decision-making with a minority of responses seeing a need for central control and an approximate equal number arguing for totally school-based curriculum development.

3.3.1.6 Curriculum content. McGaw et al. (1993) found that fewer than a quarter of the responses directly addressed the question of curriculum content. The majority of these responses stressed the importance of skills and processes with the smaller number of responses emphasizing the importance of content knowledge, values and attitudes and extra-curricula activities.

3.3.1.7 Curriculum outcomes. One in seven responses identified assessment and evaluation as key aspects of the curriculum. Most of these responses referred specifically to curriculum or program evaluation as essential to the development of effective curriculum. The capacity to monitor student progress is a critical

component of an effective school (Townsend, 1997) because the outcomes of assessments are used to improve individual performances and to evaluate the success of the curriculum.

3.3.2 The Role of the Principal

Educational changes of various kinds are constantly before the principal as reformers or reactors try to improve the educational system. The principal is constantly being admonished by higher authorities to ensure that a new policy or project is implemented. On the other hand, principals can face resistance from their staff who may be disillusioned with changes they see as fads. The principal who stands in the middle can encourage or impede change and, as the academic and administrative leader, can effectively communicate the school's goals to staff, parents, students and the greater community (Townsend, 1997). In establishing the school's component of the framework, there is need to examine the impact that principals have on change in schools (Anderson & Shirley, 1995; Fullan, 1982).

There is now considerable empirical support for the lay wisdom that principals play a primary role in a school's improvement efforts (Anderson & Shirley, 1995; Hallinger & Heck, 1996; Honig, 1988; McGaw et al. 1993), especially in relation to the implementation of new classroom practices (Wong, 1994). In McGaw et al.'s (1993) review, the mean ratings of leadership of principal, common goals and purpose, teacher involvement in decisions, learning time protected, and shared leadership ranged from important to very important. Between a quarter and a third of all responses referred to aspects of the organizational climate and emphasized cooperative, collegial and collaborative structures. By working as a team with shared goals and purposes, having mutual support and loyalty among staff members was seen also as a key organizational characteristic of an effective school. Furthermore, shared decision-making, especially in program development was emphasized with a perceived need to recognize teachers' expertise, talents and commitment. Almost one in 12 responses nominated communication as a key element in the organizational culture of an effective school, including the communication with parents.

To guide and direct a school, a principal has to be seen as a key educational leader (Anderson & Shirley, 1995; Wong, 1994). Leadership in this context can be viewed as possessing the capacity to influence others who have managerial authority (Robbins, 1994). In distinguishing between a manager and a leader, Robbins (1995, p.495) dismissed the notion of managers as being appointed and having legitimate power that allows them to reward and punish; their ability to influence is founded upon formal authority inherent in their positions. In contrast, leaders may either be appointed or emerge from within a group and can influence others to perform beyond the actions dictated by formal authority; they need to be found throughout an organization (Ogawa & Bosset, 1995). By taking the lead from business, principals need to consider the current trends toward service-orientated operations, high-tech, knowledge-based work and participatory management practices (Avi-Itzhak & Ben-Peretz, 1987; Pierose, 1988).

3.3.2.1 Strong Leadership. Effective schools research (Anderson & Shirley, 1995; Chubb, 1988; Fullan, 1983; Greenfield, 1995; Holmes & Wynne, 1989; Lawton, 1986; McGaw et al., 1993; Parish & Krueger, 1987; Townsend, 1997; Wynne & Ryan, 1993) identifies the leadership of the principal as a crucial factor in the development of high performance schools. Hallinger and Heck (1996), however, suggest caution when claiming research findings supporting the notion that the principal makes a difference. Their review of the literature and analysis of the research findings suggests that leadership effects on school achievement appear to be indirect with the principal effects being mediated by other in-school variables. However, such a finding does not diminish the principal's importance.

This participative management has certain elements. Firstly, an effective school needs a clear vision (Chubb, 1988; Newton & Tarrant, 1990) which translates into a distinctive school philosophy and stable leadership (Parish & Krueger, 1987) that allows teachers and parents to choose whether they wish to participate. Secondly, the leadership needs to have the skills to transform the vision, through the achievement of specified goals, into reality. The transformation process heavily depends on the principals' interpersonal skills, especially their capacity to communicate (Chubb, 1988; Murphy & Hallinger, 1992).

3.3.2.2 Creating the Climate for Change. Principals need to create the climate for change (Bjork & Ginsberg, 1995; Wong, 1994), but they can exhibit supportive and non-supportive behaviours (Sivage, 1982). Supportive behaviours would include: providing for individual differences (Aquila & Galovic, 1988; Wong, 1994); allowing teachers to have the opportunity to reflect on their practice (Bolton, 1997; Dywer, et al., 1991; Novella, 1996; Olsen, 1985; Smith, 1984; Sparks, 1988; Verdugo et al., 1997); providing a secure and supportive environment (Aquila & Galovic, 1988; Bjork & Ginsberg, 1995; Greenfield, 1995; Parish & Krueger, 1987; Sivage, 1982; Stringfield et al., 1997; Townsend; 1997); developing openness and trust (Chubb, 1988; Lieberman, 1988; Murphy & Hallinger, 1992; Sergiovanni, 1994); addressing problems (Anderson & Shirley, 1995; Beruldsen, 1997; Combs, 1988; Greenfield, 1995; Hensen, 1987; Hord & Huling-Austin, 1986); motivating staff (Crandall et al., 1986; Good, Grouws & Mason, 1988; Greenfield, 1995; Finn & Straker, 1987; Maehr, Midgley and Urdan, 1992); training staff (Anderson & Shirley, 1995; Good, et al., 1988; Marshall, 1988a; Pink, 1986; Stringfield et al., 1997; Townsend, 1997); and developing their own skills in communication, decision-making, conflict management and problem solving (Chubb, 1988; Hord & Huling-Austin, 1986; Marshall, 1988; Ratzki & Fisher, 1990; Robbins, 1995). The list of support behaviours is extensive and this poses problems for identifying non-supportive behaviours because they are really just the opposite of those considered supportive.

3.3.2.3 Empower others. Empowerment is typically understood to have something to do with shared decision-making, site-based management and similar schemes. Sergiovanni (1997) contends that empowerment, within a community context, focuses on commitment, obligation and duties that people feel toward each other and toward the school. In a community context, the principal can be seen as facilitator of change (Anderson & Shirley, 1995; Avi-Itzahak & Ben-Peretz, 1987; Bjork & Ginsburg, 1995; Murphy & Hallinger, 1992; Parish & Krueger, 1987; Wong, 1994) where teachers are empowered to be change agents. There is a recognition that the demands of being a principal necessitate delegation of tasks and responsibilities to staff (Busching, 1987; Hord & Huling-Austin, 1986). As Fullan (1993) contends, “all staff

need to be viewed as change agents, that is people who are empowered to drive a change”.

Facilitative principals are highly involved in curriculum decisions of teachers by using a variety of strategies to organize and influence teachers. They establish priorities, but rely heavily on teachers to influence other teachers. By contrast, the more directive principals decide on the nature of the change to be attempted and work to get their teachers to follow their decisions. The distinction between directive and facilitative principals may be important for research related to the influence of principals on change.

3.3.3 The Teaching Staff

The third area of the school characteristics of the framework relates to the teaching staff who interact with students in the classroom which is the prime learning environment within a school. Teachers create the climate for learning (Cooney, 1988; Diem, 1987; Fullan, 1982; McGaw, et al., 1993; Verdugo et al., 1997) and are a crucial part of the educational change process by building and maintaining effective classrooms. Many reforms have attempted to motivate those currently in schools and attempted to recruit a higher quality cadre of teachers. In addition, the reformers were deeply concerned about the process of preparing teachers for the classroom. Verdugo et al. (1997, p.39) suggests that “many of these reform attempts failed because the efforts were aimed at educating employees without equally considering the climate or culture in which they worked”. Teachers would enter the profession with a set of goals that had little chance of being achieved. If creating quality schools is the goal, then the focus should not be on teachers, but on developing an organizational climate that permits teachers to perform their duties in a professional and autonomous manner (Verdugo et al., 1997, p. 61). Such a suggestion is akin to Sergiovanni’s (1994) notion of a school as a community.

The establishment of a community would be crucial to making a school more effective. There are a number of additional elements identified by international research that are seen as contributing to the development of effective teachers and

effective teaching. Respondents to the Effective Schools Project (McGaw et al., 1993) considered the elements of recognizing achievement, focusing on learning, monitoring of learning, professional development and high expectations ranged as being very important. These data reveal an overall higher rating for factors associated with teachers and teaching than for those associated with the school's organizational culture (see section 2.3.2), with the exception of the educational leadership of the principal. The largest category of responses relating to teachers and teaching dealt with various aspects of the teaching/ learning process. Almost one in seven responses stressed the importance of the interactions of the teaching staff with parents, students and with each other. A similar proportion of responses referred to the personal qualities of teachers required for effective learning.

Teachers are the main agents who have the responsibility for maintaining and developing the classroom environment. Although there is considerable evidence that most teachers do not know how to teach in the way suggested by research on cognitive science (Firestone, 1996, p. 223), teachers can maintain effective classroom environments if they have the right elements available. McGaw et al. (1993) found that one in eleven responses stressed the importance of the working conditions of teachers in contributing to effective teaching and learning, and involved factors such as adequacy, quality and stability of staff, adequacy of resources, support systems and protection of teaching time. Although teachers are willing to engage in educational change, their involvement in developmental processes is limited by their hectic and isolated working environment (Crandall et al., 1986; Fullan, 1982). The degree to which teachers embrace change is affected by factors such as their participation in decision-making, access to professional development rewarding endeavour.

3.3.3.1 Participation in Decision-making. The traditional distribution of influence in schools gives teachers substantial autonomy in the classroom, but limited input to decisions at the school or district level (Conley, 1991; Firestone, 1996). By giving teachers more influence, it is believed there will be substantial improvements in the quality of education because contributing to decision-making is seen as giving a better sense of autonomy, and as a consequence, teachers are more likely to take more responsibility for any decisions made. Steps toward greater devolvement of authority

in schools have seen teachers gain more influence over out-of-class decisions affecting such issues as curriculum, budget and personnel. However, negative aspects to participative decision-making include problems of intensification where more demands, such as increased managerial demands and paperwork, are made on teachers which increases their feeling of stress (Raab, Munn, McAvoy, Bailey, Arnott & Alder, 1997).

Despite increases in working loads, teachers seem to welcome any planning process that results in the adoption of a specific, high quality, needed innovation, or in a broad-based flexible program whose general direction is compatible with the needs of the school (Fullan, 1982). Participation in the decision-making that leads to the adoption of such an innovation is not necessarily related to effective implementation. There is some evidence that the degree of community and staff participation in the early phases of the planning process turned out to be negatively related to successful implementation (Fullan, 1982). The solution is not that everyone should participate in planning - a clear impossibility; rather, it is the quality of the planning process that is essential. Indeed, at the adoption phase sheer quantity in participatory planning is harmful if it involves wasted time, disagreement, unclear needs assessment, frustrating meetings, and so on, without those involved having any improvements to show for their efforts.

Participation in decisions concerning project operations and modifications was strongly correlated with effective implementations and continuation (Howey, 1988; Townsend, 1997). The reasons for this powerful effect were easy to uncover. Teachers who were closest to the problems and progress of project activities were in the best position to suggest remedies for perceived deficiencies (Chubb, 1988; Maehr, Midley & Urdan, 1992). Moreover, where project activities and objectives reflected significant teacher input, the staff were more likely to invest the considerable energy needed to make the project work (Conley, 1991; Keith, 1996).

3.3.3.2 Professional Development. The emphasis on professional development relates to training teachers to undergo change at a school level. Such professional development is linked to a school's attempts to address an area of need and improve its

effectiveness (Andersons & Shirley, 1997; McGaw et al., 1993; Newmann et al., 1997; Stringfield et al., 1997; Townsend, 1997).

A crucial form of support relates to providing teachers with time for reflection on their practice (Firestone, 1996) when existing cultural norms are adjusted to accommodate the suggested change. Corbett et al. (1987) suggest that change of any magnitude will touch on norms deeply rooted in the school's culture and any change would have to encourage discussion that allowed the teachers to reflect on their own values and those that underpinned the proposed change. Unless there is dialogue between those proposing the change and those expected to do the implementation, the possibility of resistance to change is high. Clear communication of the implications of the change need to be made and teachers need to be able to reflect and seek clarification about the proposed change.

Although training staff for the implementation of a new innovation is essential, there also is a requirement for ongoing staff development after implementation has occurred, especially when there is a high staff turnover at the end of each year (Firestone, 1996; Stringfield et al., 1997; Townsend, 1997; Tripp, 1997). Crandall et al. (1986) contend that special attention and support are required for teachers who typically do not receive training from the original developer in order to achieve faithful implementation. Teachers not involved in the original induction of the new innovation may be newly appointed to a school which is already proceeding with an implementation.

3.3.3.3 Rewarding Endeavour. A reward or incentive is something given to recompense for things such as service, hardship or merit. Rewards can be intrinsic where the person is internally rewarded with things such as personal satisfaction and respect from peers, or extrinsic where the person gains external things such as money or extra time. The literature consistently indicates the importance of intrinsic incentives on teacher performance in general and on implementing innovations in particular (Townsend, 1997). Among other benefits that teachers cited as particularly important are increased effectiveness (the innovation would add resources, enrich the curriculum, or outperform existing practices) and professional growth (the

implementation was seen as a vehicle for becoming a stronger and more resourceful professional). Additional benefits mentioned by teachers included satisfaction, recognition, professional gain, teacher-student interaction, student achievement and changes in student behaviour and attitudes. Intrinsic motivation is correlated with notions of commitment which is one component of professionalism (Firestone, 1996). Internally motivated people believe strongly in the goals and purposes associated with their organization and exert considerable effort on its behalf.

Tangible extrinsic incentives, such as money, do little or nothing to secure good project implementation but can bring about product change. External mandates, those changes implemented by a strong leader who exerts a top-down pressure, can be effective insofar as they reinforce personal, individual incentives to innovate. Based upon findings from several studies (cited in Crandall et al., 1986), the strong leader strategy appears to require five elements: absence of debilitating conflict; an effective, debugged innovation; continuity of leadership; frequent reminders that successful and faithful implementation is important; and adequate resources and support.

3.3.4 Parents

In recent years there have been active moves to enhance parental involvement in highly centralized government educational systems (Beruldsen, 1997; Lennon & White, 1997; Matthews, 1997; McGaw et al., 1993; Wadsworth, 1997; Wong, 1994). The goal is to gain a sense of ownership by communities of the local public school: a sense of community (Sergiovanni, 1994) is where the relationship between the parents and school are cultivated. According to Wadsworth (1997), the public has shown a growing dependence on experts and professionals to solve social problems who rarely invite ordinary citizens into their deliberations and when public resistance is encountered, they are bewildered. This lack of communication has caused an erosion in the public's confidence in state schools and a suspicious attitude toward any reform agendas. As previously mentioned, Matthews (1997) describes this as a loss in legitimacy. The school experts believe they are making the schools more effective, but the public do not accept the definitions of effectiveness; they see the schools as

engaged in illegitimate practice in which they have not been involved and which is not democratic.

In government schools in Western Australia, representative councils have been established and have been given increasing responsibility for aspects of the program and staffing at the school. In the non-government sector, there is an increasing number of new parent-controlled schools being established. Underlying these developments are two contradictory views about schools: One is that schools are service organizations run by professionals and that the parents have to choose which provider will educate their children. The second is based on a democratic principle: parents have a right to be involved in the governance and control of the school. There is some research evidence that parents' level of involvement is higher when they are unable to choose the school their children attend. Respondents to the Effective Schools' Project (McGaw et al. 1993) saw as important that parents should have an interest in learning of their child, should have a sound basis of communication with the school and should be involved in school decision-making. The strongest endorsement was given to the propositions that parents should have an active interest in their child's learning and be involved in the child's school.

3.3.4.1 Support for the school. Thirty percent of responses for the McGaw et al. (1993) study emphasized the importance of engaging parental support. There is a strong sense that parents and the school should be working together and that congruence is best achieved by parents supporting the school. Financial support for schools, including both fund raising and lobbying for governmental support, is accepted as an important role for parents in both government and non-government schools.

3.3.4.2 Support for children. The notion that the development of effective links between parents and schools is in the interest of the students was endorsed by one third of the responses in the McGaw et al. (1993) study. This support is provided in a general way through the home environment (19%) and more directly through supporting their child's activities at school (17%). According to the project's authors, research shows that parents can make a difference to the child's experience of school

through the environment they provide, the habits they encourage and the attitudes and inspirations they develop.

3.3.4.3 Parental Influence. Parental involvement in schools can be justified on the basis that a parental perspective can add in important ways to those of the trained professional, especially in the development of school policy and practice. If parents to be involved in an advisory or decision-making role, then their involvement should be restricted to general policies and questions of the ethos. There is only a place for parents to be directly involved in teaching when a parent has particular expertise and can share that with the students.

3.3.5 Students

Ideally, schools provide a curriculum that enhances the overall growth and development of students by creating opportunities for students to be involved in decision-making and to take on responsibilities (Springfield et al., 1997; Townsend, 1997). However, McGaw et al. (1993) have shown that this notion is far from reality, revealing that students think teachers do not understand their point of view and do not ask for their opinions. Respondents to the Effective Schools Project survey rated six aspects of students' experience on a scale ranging from 2 (very important) to 0 (of little importance). The mean results were active learning (1.96), shared responsibility (1.76), appropriate homework (1.74), attendance encouraged (1.90), safe and congenial (1.46) and active contribution (1.67).

The respondents emphasized the importance of challenging students and of recognizing achievement publicly and personally, but they want this in the context of all students having experiences of success. Here is the dilemma for schools. How do they stimulate commitment to improvement without introducing too much competitiveness? Furthermore, there is a societal concern that if Australia is to be internationally competitive, then education has an important role to play in developing the workforce. There is now pressure for schools to abandon their traditional concern with equity in pursuit of winners over losers (McGaw et al., 1993).

McGaw et al. see the effective schools research as supporting the notion that students are competent learners, even if teaching them will require special skill and effort. Students' needs should be taken into account, but they should be challenged to work hard and do the best they can do. Effective schools set high, though realistic, expectations and do not make pessimistic assumptions about the way things must be.

3.4 Characteristics Of The System

In this study, a system is the governing body of a school or set of schools. Systems affect the adoption and implementation of innovations. Fullan (1982, pp. 63-70) argues that there are six factors related to school system effectiveness: the history of innovative attempts; the adoption process (if the change involves a system decision); central administrative support and involvement; staff development approaches; the time-line and information system; and, board/ community characteristics.

3.4.1 Districts History Of Innovative Attempts

Many attempts at collective change in education have failed (Bjork & Ginsberg, 1995; Hallinger & Heck, 1996; Johnston & Niedermeier, 1987; Keith, 1996; Marshall, 1988b; Pink, 1986, Stringfield, 1997; Verdugo et al., 1997). Such failure means that teachers can feel frustrated, and perhaps incompetent, and such feelings lead to a negative psychological history. The events and factors that build this negative psychological history can be many and varied. Firstly, there may be gaps between the view of the policy makers and the views of the teachers (Marshall, 1988b).

Innovations at District levels are often driven by policy makers responding to public pressure to reform schools that are perceived as not meeting required societal standards. The policy makers and educators need to know each others' views. Marshall (1988b) suggests that the chasm between the educators and policy makers can be bridged by training both policy makers and educators. Policy makers need to know who controls teachers' values and the policy implementation process and educators need to know who governs the state policy for education and what constitutes acceptable policy initiatives?

A second factor that can contribute to a negative psychological history is the emphasis that is placed on the reform process. Verdugo et al. (1997) contend that the reform process of the last decade have failed because of the emphases placed on motivating teachers in existing schools and on recruiting highly qualified teachers. Furthermore, the emphasis placed on teacher preparation has been misguided. Both emphases have failed because the impact of the school's culture/ climate on the teachers' work was largely ignored.

Excessive interference by governments in the local management of schools is a third factor that could create a negative psychological history. Two systems can serve as examples: Philadelphia's Education system (Novella, 1996) and Ireland's Education System (Lennon & White, 1997). In Philadelphia, district level practices regarding the assignment of teachers and principals have routinely interfered with school-based planning. The relatively high turnover of teachers in many urban districts presented an added difficulty for sustaining school-based reform initiatives. Such reforms can become ephemeral, unless accompanied by structural changes that foster continuity, such as involving stable elements of the local community in school decision-making and personal selection.

The church in Ireland has played a powerful role in local school governance (Lennon & White, 1997) where teachers have worked with the church, playing a very important role on the boards of management of the local schools. Their prominent role in school governance, with its concomitant sense of engagement and ownership, is being threatened by the establishment of regional educational boards which undermine the well-being of schools as caring and disciplined communities. The reform proposals in Ireland are seen as representative of societal transformations that are sweeping the world. The pervasive desire of parents and governments to know how the system is performing is a major driving force behind the suggested changes. Lennon and White (1997) call for a consensual approach involving parents, teachers, churches and governments. Teachers are finding that they need to play a full role in government structures at all levels and involve themselves in management structures. However, such involvement creates tensions and suspicions between teachers in the varying roles.

This climate of uncertainty can build a negative psychology amongst teachers where they are suspicious of any proposed governmental changes.

3.4.2 The Adoption Process

Fullan (1982) makes two brief and specific observations about the adoption process. Firstly, the opportunistic and bureaucratically-oriented adoption decisions are generally followed by limited implementation. Such top-down reform strategies can cause subordinates to become indifferent to the implementation process and can result in the senior management not making a serious follow-through attempt to provide needed resources and staff training. For example, the major educational reforms in America that followed the 1983 publication of *A nation at risk* (Stringfield et al., 1997) focused on a need for greater governmental regulation of schools by raising standards for graduation. These reforms allowed teachers little freedom to decide the curriculum as a whole or what was taught in their classrooms.

The policy makers of the 1980s soon came to realize the top-down implementation of standardized policies did not meet the diverse needs of students in the classroom. A second wave of reforms, that continued into the 1990s with the emergence of the systematic reform movement, realized that a positive relationship existed between systematic support and successful school reform. Change was seen as most effective when there was a top-down policy and bottom-up planning and implementation (Fullan, 1993; Stringfield et al., 1997). Anderson and Shirley (1995, p. 420) concluded that “community, district, and external factors tended to inhibit successful project implementation, rather than facilitate it, suggesting that the principal played a critical role in the successful implementation of an innovation”. Here, the principal would be guiding the bottom-up planning and implementation. Newmann et al. (1997) suggest that the politicians and policy makers have linked school accountability and school performance, assuming that strong external accountability will impel schools to improve student achievement. The authors argue that three factors keep this popular theory from working in practice - implementation

controversies with regards to standards, incentives and constituencies, insufficient effort directed toward organizing human, technical and social resources into an effective collective enterprise, and a failure to recognize the importance of internal school accountability.

3.4.3 District/ Ministry Administrative Support And Involvement

Individual teachers and single schools can bring about change without the support of central administrators, but district-wide change will not happen unless there is federal/ state/ district support. All of the research cited by Fullan (1982) showed that support of central administrators in USA federal reform initiatives was crucial for change in state/ district practice. An optimum approach can be characterized by loose-tight properties where there is both centralization and decentralization processes occurring simultaneously - a balance between top-down direction and bottom-up planning and implementation (Boyd, 1987; Fullan, 1993; Stringfield et al., 1997).

School reform can be viewed as attempts to address problems of resource distribution. Boyd (1987, p. 92) contends that difficulties in reform revolve around two kinds of reforms: substantive and psychic. Substantive reforms are aimed at remediating inequities within a society and seeking to aid the disadvantaged. Psychic reforms relate to new policies/ programs that require service delivery where personnel are faced with abandoning familiar and comfortable routines to benefit someone else.

What an organization believes and wants to do is reflected in the way it uses its resources. With substantive reforms, teachers do not take the intended changes seriously unless the central administrators demonstrate through their actions commitment to the intended reforms (Fullan, 1982). Maehr et al. (1992) contend that the budget reflects goals and that expenditure reflects values. Through a budget, an administrator sets a developmental direction and the conditions for implementation to the extent that they show specific forms of support and demonstrate an understanding of the realities that surround the intended change. They affect the quality of implementation to the extent that they understand and help to manage the set of factors and the processes pertinent to the change.

There are two main issues related to the equitable distribution of funds. Firstly, there needs to be a process for deciding on the priority areas and to what extent each will be funded. Secondly, there needs to be a process for the fair distribution of the available funds amongst the eligible schools/ groups. Once the funds reach a school, the principal needs to support the concept of the district wide innovation and ensure the resources are available to teachers (Anderson & Shirley, 1995; Fullan, 1985; Sivage, 1987). This is especially true in the early phase of the implementation process (Anderson & Shirley, 1995).

The main psychic issue facing change in schools relates to the autonomy of the teacher in the classroom. Fullan (1982, p. 64) cites research that suggests that classroom autonomy (number of classroom decisions that the teacher can make on his or her own) was negatively related to implementation. A degree of centralization is necessary for implementing comprehensive changes across schools, and that strong norms of classroom autonomy in some districts may actually inhibit organizational and district wide changes.

Firestone (1996) contends that the traditional distribution of influence in schools gives teachers substantial autonomy in the classroom, but limited input to decisions made at school or district level. He contends that reform initiatives need to give teachers more influence over out-of-classroom decisions affecting such issues as curriculum, budget and personnel. By allowing greater influence, teaching can become more of a profession by developing its capacity as a self-regulating body. Furthermore, as teachers become more professional and empowered, their increased collegiality should impact on educational outcomes. Firestone (1996, p. 221) argues that the greater the collegial interaction among teachers around issues of teaching, the more knowledgeable and effective they will become in facilitating program implementation.

Obviously, one of the most important resources needed for the implementation process is time where collegiality can be encouraged. Collegiality enabling reflective thought requires time which is crucial if teachers are to assimilate the new ideas and techniques into their mental constructs (Dwyer et al., 1991; Firestone, 1996; Good et

al., 1988; Johnson & Neidermeier, 1987; Tripp, 1996). Principals need to provide teachers with time that is free from the classroom so that reflection and collegial interaction can occur (Fullan, 1985; Sivage, 1982).

3.4.4 Staff Development Approaches

Staff development refers to training initiated by the system/ district that is directed at meeting a system/ district need. The system would engage in activities that may include the organization of an in-service day for teachers from several schools or the visitation of a consultant to various schools to support the implementation process of an innovation. Staff development is one of the most important factors related to change in practice, especially if its goal is to improve school effectiveness (Firestone et al., 1997; Fullan, 1982; Newmann et al., 1997; Stringfield et al., 1997; Townsend, 1997). Teachers need the opportunity for development where they can assimilate new ways of thinking and doing, new skills, knowledge and attitudes. In the Effective Schools Report (McGaw et al., 1993), one in 20 responses stressed the importance of professional development; and in particular, the importance of regular in-service training for the maintenance of effective teaching staff to prevent professional isolation.

Another form of professional isolation is caused by differential access to information related to educational innovations. It is well known that personal contact is the main way that knowledge about educational innovations diffuses into the educational community (Fullan, 1982). Regular in-servicing of teachers by a system can address this problem to some degree. Such workshops can act as forums for the dispersal of information related to an innovation and give participants the opportunity to assimilate the new knowledge and ask clarifying questions.

Although a teacher may have access to information and in-services where new teaching strategies are demonstrated, this does not guarantee the up-take of an innovation. There is a need for leaders to motivate, guide and encourage teachers to embrace change (Corbett et al., 1987; Greenfield, 1995; Hand et al., 1999; Sivage, 1982; Sparks, 1988; Stringfield et al., 1997). A crucial issue is whether teachers have

the opportunity to reflect on the implication of the change. Such reflection can be assisted using models that expand the perception of possibilities and letting theory guide educational practice. All of these aspects, or factors, have a knowledge component and there is an assumption that a teacher would be constantly evaluating their current practice in light of new knowledge (Tripp, 1996).

Consultants, or change agents, can influence the adoption and implementation of an innovation by teachers (Miles, Saxl & Lieberman, 1988). In many of the innovations that systems implement, there is a reliance on such consultants who have a license to help; and such assistance is needed (Crandall et al., 1986). Problems arise with the process of selecting such change agents (Miles et al., 1988).

The first selection issue relates to whether the person, or change agent, should be selected from within the organization or from the outside (Fullan, 1982). Selecting an outsider has the advantage of having a person free from entangling alliances and perhaps a person who has specialized expertise that may make the program work. On the other hand, an outsider may find the newness to the system and the stress of implementing a new system impeding his/her sensitivity to sources of support and resistance to adopting and continuing the program. In addition, the selection of an outsider may cause strains, either because the newcomer fails to grasp unwritten rules and culture, or because the old-timers may operate under the assumption that both new person and the program are likely to be transient.

A second issue related to the selection of a change agent revolves around that person's personal characteristics. Endeavouring to empirically determine the desirable qualities, Miles, et al. (1988) identified 18 key skills for educational change agents. These included six general skills (interpersonal ease, group functioning, workshop presentation, master teacher, educational content and administrative/ organizational ability) and 12 specific skills. The specific skills appeared in four areas. In the interpersonal area, the skill of initiative taking was crucial. In the socio-emotional process area, there were the skills of rapport building, support, conflict mediation, collaboration and confrontation. In the task area, the skills were individual diagnosis,

organizational diagnosis and managing/ controlling. Finally, in the area of educational content, there were the key skill of resource-bringing and demonstration.

3.4.5 Time-line and Information Systems

The time perspective is one of the most neglected aspects of the implementation process (Fullan, 1982), not because reformers make incorrect decisions about time, but because they have no time perspective about implementation. The decision makers for educational change often have an adoption time perspective, not an implementation one. Central decision makers know the complexities of the adoption process; practitioners know the complexities of the implementation process. Time is often ignored because it is a problem that cannot be solved: There is never enough of it (Fullan, 1982).

Time is required for effective planning and problem solving. Fullan (1982) claims that avoiding difficult problems creates even more serious ones, and time is no exception. Unrealistic time-lines add to the burdens of implementation; materials fail to arrive on time; orientation and training are neglected or carried out perfunctorily; communication is hurried and frequently overlooked or misinterpreted; people become overloaded with the requirements of new programs which are in addition to their normal tasks. Disillusionment, burnout, cynicism and apathy are outcomes of poorly planned changes. Conversely, open-ended time-lines are also problematic because they create ambiguity about what is expected and when and a lack of clarity of what constitutes progress.

Educational change can take a considerably long time. In discussing the notion of creating more effective schools, Stringfield et al. (1997) contend that reform in a single school can take as long as 10 years to be effectively implemented with most schools taking two to three years to implement an innovation: “No one assumes a school can get from a (status quo) to b (state goal) in one year (p. 11)”. Whatever time-line is used, one of the major dilemmas faced is the kind of information to collect, when and how best to use it (Fullan, 1982). The information or evaluation

component can range from highly elaborate accountability schemes to no formal information system at all. It must be noted, however, that an emphasis on collecting and using diagnostic information about student learning and other implementation problems has been found to be strongly related to school improvement.

3.4.6 Board/ Community Characteristics

Effective schools research (Fullan, 1983; Holmes & Wynne, 1989; Lawton, 1986; McGraw et al., 1993; Parish & Krueger, 1987; Stringfield, et al., 1997; Townsend, 1997; Wynne & Ryan, 1993) documents the importance of parental involvement. Parents are "encouraged to help their children at home, participate in school activities and be involved in school decision-making (Townsend, 1997, p. 316)". In section 3.3.4, where the role parents play in effective schools is discussed, McGraw et al. (1993) argue for the principle of parental involvement.

Involvement of parents in decision-making is becoming well established in Australian government schools, although this has been well established in non-government schools for many years (McGraw et al., 1993). However, there has to be a degree of realism with regard to the extent that parents can sustain intensive involvement. Parents have other time demands such as employment and family commitments, so the time they can devote to school governance is limited. Indeed, extensive parental involvement in decision-making has proved to be a problem in other parts of the world. In discussing devolved management in English and Scottish schools, Raab et al. (1997) write that the drive for devolved management comes from the intention to "reduce administrative, financial, and political influence of local education authorities by making schools more responsive to parents as consumers (p. 141)". However, a common experience on school boards and governing bodies is that there has been little desire for greater lay participation in decision-making either from parents or from teachers. Devolvement in Britain has not led to dramatic changes in school, parent, or local community relationships leading to wider decision-making about, or in, schools (Raab et al., 1997). The head teachers seem to play the most prominent part in decision-making and they are more accountable to lay board members and governors than parents.

3.5 External Environment

External factors, the last set of factors that influence educational changes taking place in schools or the school district, exert pressure in the context of the broader society (Fullan, 1982, Marshall, 1988b). As Stringfield et al. (1997) point out, the current economic, social and political forces today have combined to create a climate in which schools feel a great deal of pressure to change. This section examines external factors in the context of government agencies and external assistance.

Education in Canada is administered through the Education Department, a government agency of which exists in each province. The main authorities in the United States are the state departments of education and federal agencies. Australian state governments are responsible for education, but the Federal government can influence state education systems with the allocation of funds that can be tied to certain educational priorities. It is this financial support that can greatly influence an educational change within a school.

A fundamental problem of "legitimacy" seems to be facing the United States government school system which is seen as becoming dangerously disconnected from the public (Matthews, 1997, p. 741), having too great a dependence on experts (Manning, 1987; Wadsworth, 1997). There are evidently a great many people who do not believe government schools are their agents and do not believe that government schools are responsive to their concerns. Such people are creating their own schools, trying to take back the schools, or putting someone in charge who will make the school responsive to their priorities. A similar situation exists in Australia.

The availability of resources external to the school/ district is a powerful stimulant for adoption of innovations as governments are by far the major direct and indirect sources of external assistance to schools (Fullan, 1982) supplying money and technical

assistance. Pink (1988) lists funding and governance as a critical factor in the successful implementation of an innovation or school improvement project. Greenfield (1997) contends that funding decisions that consistently fail to be responsive to the growing social, emotional and pedagogical challenges facing teachers and students lead to instability in the school environment.

3.6 Summary

This chapter has examined the field of educational change management, suggesting that an educational change can be viewed through a framework that considers the impact of the innovation itself, the characteristics of the school and the school system that it operates within and the pressures exerted by the external environment. This study utilizes a framework that has built on the work of Fullan (1982), expanding his four categories of factors that affect educational change, and developing these categories in light of available literature. The framework became the tool used to examine an educational change in a Western Australian high school where a literacy innovation, called Effective Reading in the Content Areas (ERICA), was implemented over a three year period.

Chapter 4 develops an understanding of the writing process, examines the issues related to writing across-the-curriculum and describe the ERICA innovation and the historical context in which it was implemented.

CHAPTER 4

INTEGRATION OF WRITING INTO THE CURRICULUM

4.1 Introduction

Chapter 3 examined change management processes and how they could be utilized to implement a literacy strategy in a senior high school in Western Australia. Although this literacy strategy, *Effective reading in the content areas* (ERICA), focused on reading, the final stage encompassed the translation of what the students had learned into their own words. Requiring students to synthesize a piece of writing from information they have read and organized should improve student writing competence, especially if the process is repeated on a regular basis. For these reasons, this study carried out an assessment to determine if ERICA significantly improved student writing competence.

This chapter consists of three sections, namely background to understand the various notions of literacy, a review of the standards debate and the placement of the study in a historical context.

The first section of this chapter examines three literacy perspectives or paradigms, namely prescriptive, psycholinguistic and sociolinguistic. A definition of literacy is sought to create a basis for examining the similarities and differences between reading, writing, speaking and listening. A second part of this section develops an understanding that effective literacy skills are crucial for an individual's development in society and that the overall economic health of a country is related to having literate citizens who can process information.

The second major section of this chapter reviews the debate related to the notion that standards of literacy in some western nations are on the decline and contends that the integration of literacy across-the-curriculum is an effective way to develop literacy skills, including those related to writing competence. The notion of "literacy across-the-curriculum", including ERICA, is reviewed within this context.

The final section of this chapter places the study in a historical context. In Australia, there has been a national attempt to achieve common literacy outcomes across all state educational systems. The state of Western Australia has made its contribution with the publication of a Curriculum Framework (Curriculum Council, 1998) where the outcomes for literacy have been developed from the work that was done in the late 1980s to mid 1990s.

4.2 Literacy

Until recently, literacy was typically understood in terms of reading and writing, but a significant change occurred in the 1970s and 1980s with a broadening of understanding about literacy to include psycholinguistic and sociocultural conceptions (Aaron, Chall, Durkin, Good, & Strickland, 1990; Beerghoff, et al., 1997; Cahill, 1998; Coomber, 1992; Lankshear, 1998; Lightbrown & White, 1989; Parker, 1988; Reutzel & Hollingworth, 1988). These debates in the literacy domain are a consequence of people holding different epistemological commitments to particular views or paradigms of language and language learning. Phillips and Walker (1987) present three views or paradigms on language and discuss their influence on instruction in reading and writing. Research shows that there is a marked lack of consensus on how reading and writing should be taught, but there can be consensus even though language instruction is embedded in the three different paradigms of literacy - prescriptive, psycholinguistic and sociolinguistic - which are presented. There is an attempt to show that each of the views can contribute to developing an understanding of language, but on their own, these views of language provide no clear thrust for instruction.

4.2.1 Prescriptive View

The prescriptive view of literacy seeks to lay down the rules of usage. From this view, the teaching of reading and writing would simply involve the development of the relevant encoding and decoding skills which are seen as building blocks for doing things such as comprehending, engaging in classroom learning and studying curriculum subjects (Lankshear, 1998). Although grammar teaching, the epitome of

the prescriptive approach to language and its teaching, lost the esteem it had held in the nineteenth century, the belief in the need to elevate language and its users remain a mission in the twentieth century (Phillips & Walker, 1987). Whether sanctioned or not, teachers continue to include grammar instruction in their programs, publishers supply grammar texts, and computer software is available in this prescriptive tradition. In other words, there is a deeply rooted commitment to grammar amongst the teaching profession.

4.2.2 Psycholinguistic View

The psycholinguistic view emerged from the descriptive and the generative transformation traditions. The descriptive tradition gave spoken language the primacy that written language had enjoyed under the prescriptive view; generative-transformational linguistics arose from the work of Noam Chomsky which offered an explanation of language as a coherent system comprised of a surface structure and a deep structure (Phillips & Walker, 1987).

In the psycholinguistic view, language is a self-contained system to be acquired and refined by the individual (Phillips & Walker, 1987). Psycholinguists are primarily concerned with the individual reader and how that reader establishes a meaning for a text. Of primary concern are the intrapersonal context, the background knowledge and skills of the reader or writer, especially those that relate to the task of interpreting or composing a text.

Strong links can be made between psycholinguistics and semiotic development, metacognition and constructivism. All three notions have connections to language development because language and knowledge construction or cognitive development are understood to be inextricably linked (Berghoff et al., 1997; Cambourne & Brown, 1987; Christie, 1988; Davydov, 1995; Emig, 1977; Lee, 1997; Pajares & Valiante, 1997; Putney, 1996; Sperling, 1996; Tierney, Soter, O'Flahavan & McGinley, 1989; Vygotsky, 1986).

4.2.2.1 Semiotic Learning. In developing a theoretical view of language development, Parker (1983), as do others such as Emig (1977) and Lee (1997), draw on the work of Vygotsky to suggest that language development is part of an ongoing process which has its roots in the pre-speech communication of mothers and infants and continues through listening, talking, writing and reading. Language development is seen as a broader process of semiotic (signs of growth) development which includes gesture, make-believe play, drawing and dance. Furthermore, semiotic development is part of a still broader social process that involves the creation and transmission of cultural as well as individual meanings. This type of thinking can be extended to the classroom where the understanding of a particular field of knowledge is developed within a cultural context (Cobern & Aikenhead, 1998).

4.2.2.2. Metacognition. Metacognition refers to two types of cognitive activities. Firstly, the development of knowledge of certain cognitive processes and, secondly, the development of an understanding of the executive control and regulation of the cognitive processes (Rowe,1988). Cognitive skills are those broad set of mental capabilities that make possible the intellectual functioning of human beings. Metacognitive skills are a subset of those cognitive skills that enable an individual to apply and adapt what and how they have learnt about a new task.

There are at least two basic issues in both learning and teaching that relate to metacognitive skills: Firstly, students learn to guide their own learning processes (Duit & Treagust, 1998; Gallagher, 1996; Hand et al., 1999) and secondly, there is a transfer of skills and abilities from one learning situation to another (Cheng & Steffenson, 1996; Perkins & Salomon). Much debate has surrounded this second contention with there being doubt as to whether metacognitive skills can transfer to different learning situations with some arguing that metacognitive skills are context bound (Perkins & Salomon,1989). More recent results suggest that general heuristics can function in contextualized ways to access and deploy domain-specific knowledge (Cheng & Steffenson, 1996). Metacognition is not in conflict with teaching content. Rather, one is complementary to the other and the neglect of one will lead to less optimal results in the other. The key factors in teaching both would include elements

of effective teaching such as encouragement, recognition of prior learning and knowledge, explanation or direct instruction imbedded in the context of authentic inquiry, formative feedback where students learn from concrete experience and modeling on behalf of the teacher (Hand et al., 1999; Perkins & Salomon, 1989).

4.2.2.3 Constructivism. A Constructivist emphasizes the learner developing, or constructing, their own understanding of experience (Berghoff et al., 1997; Bodner, 1986; Duit & Treagust, 1998; Gunstone, 1995; Hand et al., 1999; Lythcott & Duschl, 1990). Constructivism is linked to the work of Jean Piaget, an epistemologist who studied the acquisition of knowledge from a developmental psychological perspective (Duit & Treagust, 1998). Piaget argued that knowledge is constructed as the learner strives to organize his or her experiences in terms of preexisting mental structures or schemes. Learning is seen as a life long experience where a person structures and restructures his or her experiences in light of existing schemes of thought and thereby gradually modify and expand these schemes.

Learning occurs when individuals are faced with new experiences. Piaget introduced two new terms to deal with these new experiences: assimilation and accommodation. Assimilation involves applying a preexisting scheme or mental structure to interpret new sensory data. An individual may be able to make sense of the new sensory data, but a problem where goals cannot be achieved may lead to disequilibrium or uncertainty. Equilibrium can only be restored by the modification of the preexisting schemes until the discrepancy is resolved. The process by which the existing structures are modified to fit newly assimilated data is called accommodation.

The processes of assimilation and accommodation relate to the development of knowledge that only occurs through cognitive processes. Piaget distinguishes between cognitive functions and cognitive structures. Cognitive functions, such as adaptation and organization, remain constant throughout life; whereas, cognitive structures are seen as changing qualitatively and quantitatively with increasing age and experience. As cognitive structures and functions develop, individuals acquire knowledge that is able to take on different forms of knowledge: Physical knowledge relates to experiential knowledge of physical events; logico-mathematical

knowledge relates to knowledge of the relationship between objects; and social knowledge relates to an understanding of social conventions.

As constructivism is intricately concerned with the growth of knowledge, it has implications for the nature of teaching or instruction (Bodner, 1986; Cobern & Aikenhead, 1998; Duit & Treagust, 1998; Gunstone, 1995; Hand et al., 1999; Novak, 1996). Social knowledge can be taught by direct instruction, but physical and logico-mathematical knowledge cannot be transferred intact from the mind of the teacher to the mind of the learner (Bodner, 1986). The constructivist paradigm, therefore, requires a subtle shift in perspective whereby a teacher attempts to facilitate learning rather than to instruct (Cobern & Aikenhead, 1998; Duit & Treagust, 1998; Hand et al., 1999).

These two apparently opposing positions (facilitation vs direct instruction) have a history in education. Some would suggest that it is a relatively recent shift from a behaviourist to cognitive psychological perspective in Education (Duit & Treagust, 1998); others see the ideas in these psychological perspectives as having extended back thousands of years (Brooks, 1988). For example, mimetic learning, where students are expected to acquire facts and skills from drill and practice exercises, has long been the antithesis to transformative learning - a type of teaching that seeks to influence the attitudes and interests of the learner so that it evokes changes in perspective Brooks (1988). There could be problems with creating too strong a dichotomy between these two traditions, or modes of thinking. The key issue is to balance the two extremes and seek the middle ground with the teacher being there to help students build a foundation of skills and information while they simultaneously use their creative, intellectual abilities to solve problems and incidentally develop positive dispositions toward such endeavours. In promoting a synthesis between the two traditions, Brooks (1988) articulates the difference in relation to a typical lesson. In a traditional lesson, the concept is introduced, then there is practice and application, followed by further exploration if time permits. In a constructivist lesson exploration comes first, the teacher then formally introduces the concept to be considered, usually using new terms and introducing new information and different

ways of thinking (intervention), and finally, the teacher provides further activities that involve the same concepts (discovery).

4.2.3 Sociolinguistic View

This view, which emerged in the last decade (Lankshear, 1998), is grounded in recent theory and research in sociolinguistics and in ethnography of communication. As described earlier, the development of critical thinking and the ability to construct knowledge depend on language development. Psychologists and epistemologists both argue for a developmental relationship between language and cognitive processes. The language theories of Vygotsky and Bakhtin suggest that language represents a process rooted in the social world (Emig, 1977; Lankshear, 1998; Phillips & Walker, 1987; Shanahan, 1997; Sperliing, 1997). With this conceptualization, reading and writing are viewed not only as cognitive structures, but also as social and linguistic processes that help make sense of the world around a person (Emig, 1977; Lee, 1997; Phillips & Walker, 1987; Sperling, 1997; Sperling & Woodlief, 1997).

The sociolinguists are primarily concerned with the interpersonal context, the organization of reading and writing events, the interaction on the processes of reading and writing, as well as how the reading and writing influenced the interaction of participants (Phillips & Walker, 1987). From this standpoint, literacy is best understood as referring to the social practices and conceptions of reading and writing. Literacy is not just a tool for achieving purposes extrinsic to it; rather, it is really literacies (Lankshear, 1998) where many print-based activities take different forms, some of which are very unlike others in terms of such qualities as the purpose and the kind of texts involved. The differences reside in the literacies themselves and are not outside or independent of them. Individuals never learn, teach or employ literacy skills in context-free ways, but always with some context or practice. Literacies always come in association with practical purposes and are always embedded within larger practices (Lankshear, 1998).

Lankshear (1998) sees the sociocultural perspective as having three interlocking dimensions. The first is an operational dimension, where the literacy event happens within the medium of language involves competency of the language system: Individuals are expected to be able to read and write in a range of contexts, in an appropriate and adequate manner. The second dimension, termed “cultural” and related to the meaning aspect of literacy, involves competency with regard to the meaning system and recognizes that literacy acts and events are not only context specific, but also entail a specific content. There is a notion of being literate with regard to something, some aspect of knowledge or experience. A third dimension, referred to as “critical”, has to do with the socially constructed nature of all human practices and meaning systems. In order to participate effectively and productively in any social practice, humans must socialize into it. The critical dimension of literacy is the basis for ensuring that participants cannot merely participate in a practice and make meanings within it, but can in various ways transform and actively produce it.

4.3 A Definition of Literacy

“There is no single definition of literacy. What counts as literacy at a particular time and place depends on who has the power to define it” (Bloome, 1997, p. 107). A definition of literacy, however, would need to reflect the three literacy perspectives and here lies the difficulty. An effective attempt to define literacy has been made by the Australian government’s Benchmark Project which sought to construct standards enabling Australian students to be assessed on the extent to which they are achieving the required benchmarks. This definition given was:

Literacy is the ability to read and use written information and to write appropriately in a range of contexts. It also involves the integration of speaking, listening, viewing and critical thinking with reading and writing. It includes the cultural knowledge that enables a speaker, writer or reader to recognize and use language appropriate to different social situations. (Peach, 1998, p.12)

As can be seen, the notions of listening, speaking, reading and writing figure significantly in this and other definitions of literacy. Important distinctions are now made between these four aspects of literacy.

4.3.1 Listening, Speaking, Reading and Writing: A Theoretical Perspective

There are two different camps when it comes to the relationship between listening, speaking, reading and writing (Emig, 1977; Sperling, 1996). Those like Emig (1977) have argued from a standpoint that there are first-order and second-order processes. Talking and listening are characterized as first-order processes because they are acquired without formal or systematic instruction; reading and writing are classified as second-order processes because they tend to be learned initially only with the aid of formal and systematic instruction. In her review article, Sperling (1996) contrasts the two camps by revisiting the writing-speaking connection. She summarizes the work of those who suggest that writing differs from speaking and those who take the opposite position and then concludes that both positions have points of validity.

The research that shapes the position that speaking and writing are different discourses indicates that what writing looks like is strongly connected to the cognitive and social-cultural contexts in which it is produced. These research data are drawn from the domains of novice writers, academic discourse, questions of instruction, disciplinary focus, speaking interferes with writing and community-school connections (Sperling, 1996). While children at an early age may internalize some of the characteristics of written discourse, perhaps especially the characteristics associated with familiar text genres such as stories, there is little knowledge of how best to nurture and to expand such understandings as students develop and produce different types of writing in schools. Indeed, there is a lack information on how best to teach academic discourse to students from diverse academic, social or cultural backgrounds (Sperling, 1996).

Even so, a large body of research suggests that speaking interferes with writing and points to the difficulty of producing the written discourse valued in schools. Research has attributed students' problems to a number of domains, for example, the cognitive influence of egocentric speech, the social influences of differing communicative contexts and the different cultural approaches to spoken communication. There is still too little knowledge to explain why different social or

cultural spoken strategies show up systematically in students' school writing and there is a deficit of broad-based studies that examine the ways of communicating in students' communities and families and that relate these ways to the writing that students do in schools (Sperling, 1996).

On the other hand, there are those who would argue that speaking plays a significant role in the development of writing and the understanding of concepts (Etkina, 2000; Rivard & Straw, 2000; Van Zee, Iwasyk, Kurose, Simpson & Wild, 2001). The research that reflects the belief that writing is similar to speaking has generally emphasized the dialogic relationship between writers and readers and advocated instructional approaches in which writers' familiarity with readers is paramount (Sperling, 1996). Supportive research draws from the domains of the writer and their audiences, the researcher as audience, the reader as a responder, the writer and the reader interacting, the conversation with the teacher, the conversation with the peers and the involvement of peer collaborators. In all of these domains, instruction is to promote real conversations with the assumption that they inform, and can be extended by, students' subsequent writing. Genuine conversations are those where student involvement reaches beyond pleasing the teacher (Etkina, 2000; Rivard & Straw, 2000; Sperling, 1996; Van Zee et. al., 2001).

With reference to the understanding of concepts, talk and writing can be seen as complimentary processes (Rivard & Straw, 2000). Although writing may be a powerful tool for structuring knowledge, talk is still important for generating, clarifying, sharing and distributing ideas (Etkina, 2000; Rivard & Straw, 2000; Van Zee et. al., 2001). According to (Etkina, 2000), weekly report writing, used as a two way feedback tool in teaching science and where students are encouraged to write down what they have learned and difficulties they are experiencing in understanding concepts, lay the foundation for subsequent discussions. The author has come to realize that when students are given the opportunity to come up with answers in interactive group discussions instead of passive listening in lectures, then students are better able to reconstruct their knowledge.

There is a need, however, to take account of the research that has shown that process instruction in writing does not necessarily lead to better outcomes because there is no guarantee that real conversations have taken place. Such real conversations are heavily dependent on the broader instructional environment of the classroom. Research shows that “only teachers following highly interactive and constructivist classroom ‘scripts’, including carefully configured physical and social arrangements, shaped conversations that could support student written work” (Sperling, 1996, p. 72). A related concern voiced by teachers is that interactive practices, such as writing conferences and peer groups, take up precious class time that has to be allocated to a range of needs. Furthermore, there is a lack of studies that attempt to understand the relationship between the writer in the process of speaking to others in conversational contexts and the writer in the actual process of writing. Behind the assumption that writing is conversational is an indication that speaking and writing are dialogically the same; however, it is clear that the two situations are usually different. For example, in addressing absent interlocutors writers must employ mental strategies that speakers, who negotiate with present others in real time, do not.

Sperling (1996) concludes that neither of the two opposing views related to the relationship between writing to speaking can be disregarded. Although writing does differ from speaking, there are ways that the processes are similar and each end of the continuum reflects incomplete assumptions about writing and learning. A worthwhile goal is to integrate these two positions into useful pedagogy (Castel & Isom, 1994; Rivard & Straw, 2000; Sutton, 1998). Teachers remain the central force in writing instruction, not only as a reader of students’ work, but also as providers of useful language experiences that support the development of student writing. Common sense would suggest that the more teachers know about written discourse, then the more likely they are to design instruction that helps students write effectively in a range of situations (Castel & Isom, 1994; Hand et al., 1999; Rivard & Straw, 2000; Sutton, 1998). For example, there is a strong parallel between science and literacy process skills (Castel & Isom, 1994) which when understood, can lead to strategies such as using talk to generate, clarify and share ideas amongst students before they begin to write for understanding (Rivard & Straw, 2000). Unfortunately, there is little available in the domain of knowledge of how best to instruct students, but this is

changing with work being done by those such as Van Zee et. al. (2001) which is exploring ways which speaking can be used in the science classroom. In fact, both positions described in Sperling's (1996) review have been criticized for having little effect on student writing.

If writing as a process is heavily dependent on human relationships, then not only are the relationships forged between the writers and readers important, but so are the relationships between the writers and others in the learning environment that help to construct writers' realities and inform readers. According to Sperling (1996), peers working in groups or pairs, teachers and students working together, and teachers and students interacting with others outside the classroom all influence students' awareness of the social-communicative undercurrent in writing and provide a context in which writing can have communicative force with particular audiences. Unfortunately, little is known about the impact of such classrooms on students' specific written discourse skills and strategies, or about what skills and strategies students might take from such classrooms into other writing settings. Such issues sit at the center of social cognitive learning theories. Context also plays a critical role in shaping written discourse, but writing research is in its infancy and to explain the complexities of writing in context of different disciplines a greater understanding of how writing might be taught in different disciplinary contexts needs to be developed.

4.3.2 Reading and Writing Relationships

As previously stated, reading and writing can be classified as second order processes because some instruction is required if a person is to acquire these skills (Emig, 1978; Sperling, 1996). Reading and writing are clearly dependent on many of the same cognitive elements (Emig, 1978; Shanahan, 1997): A student needs to know the meanings of many words in order to read and write and this involves knowledge of how sounds and symbols relate, and how text relates to the external world. Differences in the two processes have become obvious through the fact that instruction is needed in both and that reading and writing can be thought of as two separate but overlapping ways of thinking (Shanahan, 1997). For example,

awareness of an author's train of thought is central to effective critical reading because the reader is anticipating any new information.

The cognitive separation of reading and writing also means that the integration of instruction in this area does not automatically lead to learning. Thus, adding writing to the reading curriculum does not necessarily mean that students will improve in reading. Improved learning is only likely to occur if reading and writing are combined in appropriate ways. Shanahan (1997) has demonstrated that the nature of how reading and writing are connected changes with development; for example, as beginners develop a comfortable grasp of basic word recognition and spelling, their attention begins to shift to other issues of interpretation and communication.

If integration of both reading and writing does not necessarily lead to better learning outcomes, then there is a need for guidelines to achieve effective integrated instruction. First, it is essential to know what integration is supposed to accomplish because without a clear conception of the desired outcomes, it is impossible to plan, teach, or assess in powerful ways. As units built around themes does not ensure effective learning outcomes, Shanahan (1997) favours a thematic approach where there is intellectual depth and an avoidance of fragmentation and the overemphasis on minor facts; designing units to be fun may not necessarily create any great depth of knowledge. For example, careful analysis of integrated instruction in the social studies has shown that far too often the activities do not lead to any kind of academic learning (Shanahan, 1997). However, setting goals, such as the National Science Education Standards who argue that "student understanding is actively constructed through individual and social processes (Rivard & Shaw, 2000 p. 567), can lead to the integration of literacy strategies into science classrooms (Casteel & Isom, 1994; Van Zee et. al., 2001). In Western Australia, the setting of across-the-curriculum literacy outcomes in Curriculum Framework (Curriculum Council of Western Australia, 1998) has provided a driving force to each of the curriculum areas to adopt strategies that assist student learning and the development of literacy skills.

The second guideline for effective integration addresses some of the problems associated with thematic units. There is a requirement to assign a great deal of

attention to the separate disciplines. Shanahan's (1997) research has shown that maximum cross-curricular benefits come when both reading and writing receive instructional attention.

The third guideline related to integration is concerned with social and cultural boundaries and not just those that are cognitive. Disciplines are more than collections of information; they provide ways of thinking and stances from which to approach the world. For literacy educators, a useful way of thinking about integration is to consider it as a fundamental social act of moving across cultures (Shanahan, 1997, p. 17). For example, it is worth knowing how to read and write science text, and various instructional approaches help students to handle the special vocabulary demands and organizational style of science (Casteel & Isom, 1994). More importantly, readers and writers need to develop an understanding of how scientists think about text, and how their thinking differs from that of historians, reporters or novelists. Sutton (1998) points out that textbook knowledge can hide the human process behind the derivation of that knowledge and how normal communication between scientists has played a significant part in the development of the accepted textbook knowledge. Integrated instruction will serve literacy learning best if it focuses on genres as cultural ways of communicating, and on being able to translate information from one form to another. These connections should be made explicitly and process talks in which disciplinary similarities and differences are explored should be a regular part of integrated instruction.

The final guideline is that integration does not eliminate the need for direct explanation or drill and practice. Students can gain valuable learning while pursuing a well-planned thematic unit or conducting their own personal inquiries; such endeavours are motivational and help students recognize the utility of what is being studied. However, for most students, such work does not provide sufficient practice to make them fluent readers, good multipliers or effective spellers. Even within integrated instruction, there is a need for minimum lessons and guided practice. This contention is supported by a meta-analysis study (Sadoski, Wilson & Norton, 1997) that showed that few general activities consistently produced significant gains in writing quality, but some did and were very powerful. Chang and Steffenson,

(1996), who collected both quantitative and descriptive data, have shown that direct teaching of written composition can improve student writing competence.

4.3.3 Writing as a mode of learning

Writing is an important medium for communication, but it is also a means of learning (Bereiter & Scardamalia, 1987; Bintz, 1989; Campagna, 1987; Emig, 1977; Farr, 1985; Groenewold & Hayden, 1989; Hastwell, 1987; Morris & Stewart-Dore, 1984; Shanahan, 1997) because it has all the attributes of a good learning strategy. Psychologists such as Vygotsky, Luria and Bruner have argued that higher cognitive functions, such as analysis and synthesis, seem to develop most fully only with the support system of verbal language, particularly of written language. When writing, the person is engaged in a task that provides the opportunity to establish connections between the different concepts, provides re-inforcement and allows for immediate feedback. Successful learning, as well as writing to learn, is most successful when a person involves himself/herself in writing, especially when the topic is personally interesting. The writing of weekly reports has been shown by Etkina (2000) to be an effective two-way feedback tool to assist students to learn physics where what is written lays the foundation interactive group discussions. Learning is enhanced if the writer works at his/her own pace, slowly or quickly reading over his/her work, using the time to review what has been written and to synthesize what needs to be written next.

Writing, as an expansion of inner speech, is an attempt to organize thoughts and to establish systematic connections and relationships between them. Good writing should convey these connections and conceptual relationships to the reader in an unambiguous way. The actual pace of the writing process is much slower than other forms of communication and this provides the opportunity to establish the connections and relationships by connecting the three major tenses of experience: past, present and future. The two major modes by which these three aspects are united are analysis and synthesis. When a new thought is encountered, past and present thoughts influence the analysis and breakdown into constituent parts. The process of synthesis is responsible for the re-organization of constituent parts into a

new thought which, when committed to paper, enables the writer to review a past thought, see how it contributed to the existing thought and contemplate where the thought is leading.

Writing has an inherent reinforcing cycle involving hand, eye and brain (Emig, 1977). The subject matter that is being synthesized into a whole is continually reviewed in the process of adding to what has already been written. By the time the piece of writing is completed, a person may have returned to an idea several times. This explains why people have better recall of information after writing, rather than just reading about it.

Writing also provides the opportunity for immediate and long-term feedback (Emig, 1977). For example, the product of writing, available to the writer for immediate visual re-scanning and review, enables the writer to re-evaluate what has been written, and therefore, provides the base for any re-formulations. Furthermore, a writer's work is a record of the development of his/her thoughts. Such writing can be used by a teacher to identify difficulties students are experiencing while learning new material (Etkina, 2000). When a writer returns to an earlier piece of work, a comparison can be made between his/her existing and past thoughts. Again, the writing can provide the base for any re-formulations.

Since Emig's (1977) work was carried out two decades ago, this author suggests that strong links between constructivism, metacognition and writing have been established. Metacognition and constructivism are complementary processes. An appropriately metacognitive learner is one who can effectively undertake the constructivist processes of recognition, evaluation, and when needed, reconstruction of his or her conceptions, perceptions, attitudes and abilities.

All aspects of literacy, including writing, are critical tools in the constructivist approach and are the foundation of the critical educational processes where thinking is required (Etkina, 2000; Rivard & Straw, 2000; Van Zee et. al., 2001). Central to this notion is the concept of an integrated learning environment where a person's learning is seen as being of a personal nature (Etkina, 2000; Casteel & Isom, 1994;

Rivard & Straw, 2000; Van Zee et. al., 2001). The integrated environment provided by a constructivist teaching approach enables the content and context perspectives to be seen as different parts of a holistic process. As students make sense of the content, they have the opportunity to assimilate new skills and knowledge into existing cognitive structures through the language medium.

Rivalland (1989) contends that helping children to learn to think critically as they learn to read and write is a complex and intriguing task. He suggests that there are three different perspectives for viewing activity that will help unfold some of the issues involved in helping students learn to compose meanings through reading and writing: The complexity of cognitive processes, the linguistic demands and the social needs that need to be met each of which contribute to the development of critical thinking.

If learning to read and write is a complex and intriguing task, then it is not surprising that a significant proportion of a society's population may not develop the skills that would enable them to effectively participate in everyday life. The extent to which this is the case is the subject of much debate. The next sections discuss the notion that literacy standards are declining and that educational systems are failing to develop appropriate literacy standards amongst the youth.

4.4 Literacy Standards

There is a debate raging across the developed nations that literacy standards are declining (Berliner & Biddle, 1998; Charles, 1999; Finn, 1991; Green, Hodgins & Luke, 1995; Peel & Hargreaves, 1995; Stedman, 1996; Street, 1997). As Stedman (1996) states:

Do today's students read and write as well as those of a few decades ago? Are they as literate as earlier generations? These questions are at the heart of a fierce debate over the quality of today's schools and how they should be reformed. For over a decade, school critics have decried a decline in academic achievement and pointed to the Scholastic Assessment Test (SAT) decline, low reading scores, and poor historical knowledge as evidence. Conservative critics

have called on the public schools to restore high standards and their commitment to Western culture.

(pp. 283-284)

Stedman (1996) quotes several sources that support the notion that literacy standards are declining. Although conservatives have been the most vocal about a decline, Stedman suggests that other educators have lamented the loss of academic standards and old fashioned work habits. However, the notion of decline has been vigorously disputed in recent years, with some contending that school achievement is at historically high levels and that the reports of a decline have been greatly exaggerated or even fabricated (Stedman, 1996). The entire literacy standards debate has placed the American education system in political hyperbole (Stedman, 1996). For example, the *Nation at risk* report suggested that their education system was facing a “rising tide of mediocrity that threatens our very future as a nation and people?” (Stedman, 1996, p. 283).

Stedman (1996) attempts to define and measure literacy in a United States context using four types of evidence on literacy and trends and performance: national literacy data, then-and-now studies, SAT trends and test re-norming studies, particularly those pertaining to the 1970s. He concludes that the major reform reports of 1980s often exaggerated the extent of the test score decline. This SAT decline, widely used as a national indicator, captured headlines and swamped perceptions of educational trends. For example, the report *Nation at risk* was seen by Stedman (1996) as having galvanized public opinion with reference to school reform by “making sweeping assertions about educational decline and ‘rising mediocrity’” (p. 283). These well publicized claims reinforced the then public concern about social decay, rising crime and poverty and declining values. It made sense to the public that if a society was declining, so were schools.

Although the investigation by Stedman (1996) has shown that there has not been a general decline in literacy standards in the United States, it also showed that the standards of literacy were low. When analyzed, three decades of national studies show that students and adults in the United States have serious literacy problems. According to Stedman (1996), the educational crisis is real and changes are needed at

both the elementary and secondary levels. The past notion that elementary schooling is primarily for developing basic literacy skills and that high schools serve to impart knowledge is too sequential and passive. Knowledge and literacy are mutually dependent and developed by actively engaging materials and text. All levels of schooling need to combine grounding in general knowledge and discipline content with problem-solving, critical reading skills and analytical writing. Schools are seen as needing to expand emerging approaches to literacy such as the writing process, writing-across-the-curriculum, portfolios, and the interdisciplinary teaching of English and history.

The changes required in schools should not place new burdens on teachers that are unfair and unworkable. Stedman (1996) suggests that the necessary school reforms need to change workloads, and provide meaningful support and training. If school reform is essentially about improving literacy, then the whole society has to own the process. It cannot be left solely to schools.

In a similar vein, Charles (1999) claims that in England there has been a verifiable drop in literacy standards, where there has been a focus on reading with subsequent changes in teaching methodology. He cites the work of Turner who analyzed data from across nine school districts and included a sample of 400,000 students. Turner was very critical of the holistic reading techniques that he saw as non-teaching. By holistic, Turner was referring to the ideas promoted by Goodman and Smith in the mid 1970s that children should be immersed in language, want to read and decipher words in context. The English education bureaucracy vilified Turner. However, Charles (1999) claims that the Education Minister, after substantial additional testing, has exonerated Turner as the issue was one of data and its interpretation.

Australia's national government recognized the need to have objective data on the performance of its students in areas such as literacy and numeracy. As what has become known as the Hobart Convention, the State and Territory Ministers of Education, together with the Commonwealth Minister, agreed to set national Educational goals (Australian Education Council, 1990). In Hobart (April, 1989), the Ministers set the Common and Agreed Goals for Schooling in Australia, one of

which related to literacy where each state has agreed to develop student literacy skills in the areas of listening, speaking, reading and writing. As the Ministers met to determine how the set goals would be achieved, a decision was made to reduce the 10 national goals into three main groupings:

- General: Goals 1-3.

These three goals covered school retention rates, aged participation rates, improved access to education and initiatives to assist the teaching profession.

- Vocational: Goals 4, 5 and 10.

These three goals covered Year 12 certification, promotion of school/TAFE links, review of Post Compulsory Education and Training and the formation of a National Career Information Database.

- Curriculum: Goals 6-9.

All these goals are related to the various curriculum areas, but goal 6 specifies particular student competencies expected as an outcome of schooling. Literacy and numeracy are the two competencies most commonly identified.

A consequence of the Hobart Convention has been the national mapping of the English Language/Literacy Curriculum. The scope of the mapping exercise was defined in the *Australian Education Council* (1990), as follows:

English literacy may encompass functional, social, and cultural aspects of literacy. It involves the integration of reading, writing, speaking, listening and critical thinking skills, skills in the use of conventions of language (such as grammar and spelling) and skills in handwriting and keyboard use. It is developed through both the composition and comprehension of a wide range of texts, which may include, amongst others, novels, poems, plays, stories, newspapers, cartoons, picture films, TV programs, conversations, songs and radio programs. (p. 11)

There have been two phases to the mapping exercise: Phase 1 involved a national survey to obtain information from all systems regarding the use of materials in the teaching of literacy; Phase 2 commenced late in 1990 with the aim of building on the national survey to determine the scope of the English language/literacy curriculum.

The national survey had noted that at the school level across both the government and non-government sectors there was general acceptance of the need to continually

evaluate English programs. Assessment was seen as having a key role to play in informing teaching practice. The focus of this assessment was to be on determining the understandings, skills, knowledge and processes which would typically be made available to students at each of the bands of schooling years K-4, 4-7, 7-10 and 10-12. Each state in Australia has attempted to determine its own literacy standards.

A literacy focus in the Western Australian input for the 1990 National Report came from a Monitoring Standards project responsible for the collection of data related to literacy standards in Years 3, 7 and 10. Student performance was to be measured against six predetermined standards or benchmarks. This ongoing project aimed to give parents, teachers and the community information about student performance in Western Australian government schools. The 1992 National Report (Australian Education Council, 1992) makes reference to the 1990 Education Standards in Western Australian Government Schools Report (Ministry of Education, 1990/91). This report showed that the vast majority of students (upward of 75%) were at the expected benchmarks for their age in writing. Around 10% of students were above and 10% of students below the expected benchmarks.

In 1992, samples of student's work were again collected and analyzed. Unlike the 1990 data, the 1992 data related to a standards framework. Hence, the 1990 data had to be manipulated before a comparison with the 1992 data could be made. The substantial improvement in writing over this period was largely attributed to the students being given the opportunity to plan their writing through group and class instruction. In addition, instructions prior to the end of the writing tasks reminded them of the need to proof their work. The tasks for the Monitoring Standards in Education in the 1995 assessment (Cook, Randall & Richards, 1997) were essentially the same as for those in 1992 (Ministry of Education, 1992). One main difference was that unlike the 1992 cohort, the 1995 students were not given a choice of genre. The outcome of the assessment process was that there were no statistically significant differences in performance of students on the writing assessments in Years 7 and 10 between 1992 and 1995, but the Year 3 students performed less well than those in 1992. The data showed that most Year 7 (83%) and Year 10 (91%) of students demonstrated level 4 skills or above. Typically, these students had a sound

basic knowledge of how to use English, they used familiar ideas and formations in their writing, showed control over the basic texts and tried to adjust their writing to meet the needs of the audience.

The attainment of Level 6 by 24% of the Year 10 student population shows sound achievement and effective literacy standards as measured against the benchmarks. These students wrote in a variety of ways to explore complex issues, demonstrating spelling, syntax and command of text structures adequate for most expository and imaginative writing. They could recognize the importance of making their meaning clear for readers by using correct punctuation and grammar and by manipulating words and the structure of the text. Although the Western Australian data support the notion that Australia's literacy standards match expected benchmarks, there is still a general public and government perception that there is a literacy problem in Australia. Brock (1998) saw the then Federal Minister of Education, Dr Kemp, as having "launched the latest literacy furphy rocket into the Australia atmosphere" (p. 15). His article aimed to expose some of the major "myths" in literacy article and saw Kemp as launching a "shock/ horror story" in October 1996. Kemp is seen by Brock, (1998, pp. 14-15) as creating a myth by releasing "statements of outrage through media outlets" when his statements did not reflect the real data. When Kemp released his statement claiming that one third of Year 9 students (14 year olds) in Australia could not read or write, the Australian Council of Education (ACER) report was several months off being written. Furthermore, the notion of one third of students being illiterate was misleading. In fact, the study showed that one third of the students did not reach "mastery" which was defined as having answered more than 80% of the test items correctly. In a bizarre twist, Brian Toohey, a journalist of the *Australian Financial Review* and *Sunday Herald*, asked Martin Flanagan, an *Age* journalist who was the author of a comprehension passage used in the test, to take the test himself. The author only scored 60%, suggesting he had not mastered the English language. In fact, there were two questions connected to Flanagan's passage which asked the students to state what the author meant. Flanagan "got both of these 'wrong': or, rather, his obviously correct answers were deemed to be 'incorrect' by the ACER markers. Flanagan, the author, wrote what the author meant, but the

answers determined by the examiners were different. Whose literacy was on display here? (Brock, 1998, p15).”

The debate since Kemp’s pronouncement have raged with many authors in teaching journals and newspapers voicing their opinions about the supposed literacy crisis. The Minister of Schools, Senator Chris Ellison, has rejected the notion that the Government has manufactured a literacy crisis, suggesting that the proponents of this view argue that the data do not show a deterioration in literacy standards. Ellison (1998) goes on to suggest that the National School English Survey shows that 30% of students are not meeting a minimum acceptable standard of literacy and that considerable Commonwealth spending on literacy over the previous 30 years had not worked. In opposition to this view, Ashdown (1998) quotes the claims of Dr Barbara Kamler who suggests that the Australian Bureau of Statistics figures over the last 20 years show no major change in literacy levels.

At the center of the debate is the process that has been used to suggest that a third of Australia’s primary students were illiterate. Messina (1997) presents the arguments for and against drawing statistical lines (benchmarks) where a percentage of students can be deemed above or below a certain standard. In fact, she quotes Masters of the ACER as having warned a management committee against drawing an arbitrary line, especially when no national standards had been agreed upon.

Whilst there may be controversy about whether the draft benchmarks are appropriate, there was no denying the existence of a “learning gap” of at least five years (Hill & Crevola, 1998). There is at least 5 years between the top and bottom 10% of students in each of the Years 3 and 5 sampled. Furthermore, Hill quotes the findings of the Victorian Quality Schools Project (VQSP) as confirming that, by as early as Year 3, the gap between the haves and the have nots is already wide. By Year 10, the students at the 10th percentile in reading had progressed no further than the level of students at the 50th percentile in Year 3. In other words, students who failed to make progress during the first two years of school rarely catch up with their peers. They are also at risk of becoming low achievers who are alienated from school and drop out of education at the earliest opportunity.

The essence of the debate related to declining standards is that the population perceives that there is a problem. There has been a growing accumulation of data that can be accessed to see if claims that there is a literacy problem is either supported or discredited. A greater emphasis on informed decision-making will determine how different countries and educational institutions respond to the need to make progress in raising literacy standards.

4.5 Improving Writing Standards: the Whole School Approach.

As reading and writing are such integrated processes, it is not difficult to envisage a similar metacognitive process for writing. Students would be taught various writing forms and they would hopefully be able to metacognitively translate them to other writing tasks. However, empirical observation is that the skills of writing taught in Language Arts and English classes do not readily transfer to the content areas (Soter, 1987). This is because the content is different, the methods of organizing that content are also different and the language forms and vocabulary are also content and context-specific (Christie, 1988). Thus, the content of a particular area of intellectual pursuit affects the particular discourse patterns. To learn the content of these particular intellectual disciplines means it is necessary to learn particular linguistic patterns or genres. Christie (1987; 1988; 1990), who has strongly emphasized the notion of teaching genre or various forms of writing, laments the role that public education has had in effectively diminishing, and sometimes even denying, the role of language in school. A strong belief is seen as prevailing by which both knowledge and intellectual skills of various kinds are understood to have status in some way independent of the language patterns in which they come into being. According to Christie, rarely in practice is it acknowledged that the development of the desired mental skills is entirely dependent on mastery of the linguistic patterns in which these skills are realized and equally rarely is it acknowledged that knowledge itself is constructed in varying patterns of discourse.

The notion that intellectual skills of various kinds have status independent of the language patterns in which they come into being has its origin in Greek thought and

can be traced back to the 19th Century belief in mental faculties. A paramount function of schooling was "the training of faculties". Where in the 19th Century, educational theorists wrote of the faculties and their development, in the 20th Century they began to think in developmental stages and learning tasks. For example, the conceptual or cognitive faculty was expressed in a number of abilities such as the ability to memorize, concentrate, form ideas and to compare and classify. In the 20th Century, such abilities were classified as belonging to the cognitive domain of development. However, both ways of viewing knowledge saw language as just a useful instrument for the development of abilities or skills. There needs to be, however, a recognition that language is crucial to knowledge development. Christie (1988) argues: "Significant language skills ... can be developed only in contexts where the need is to grapple with significant meanings, and hence to construct significant knowledge (p. 165)".

The language conventions and the various linguistic patterns are essential to the production of content or the making sense of experience. For example, Sutton (1998) sees language working both as an instrument of figurative interpretation and as a means of attempting to transmit to others what we think. The content of science comes into being in characteristic discourse patterns. Although the accepted wisdom of science, as encoded in the textbooks, forms the basis of the knowledge to be transmitted, students experience difficulties coming terms with the linguistic patterns in which the content is encoded and need to be helped to construct or develop their own understanding (Sutton, 1988). However, it can be argued that there are strong similarities between science and literacy process skills and that students can use literacy strategies to unpack science concepts (Casteel & Isom, 1994). If linguistic patterns are fundamental to the production of content, then all subject areas have responsibilities for the development of fundamental literacy skills from which linguistic patterns are built. This leads us to the notion of literacy across-the-curriculum.

4.5.1 Literacy (writing) Across-the-curriculum

The notion of learning for life is central to a concept of a general education where children learn certain skills that enable them to become life long learners and be empowered to take some degree of control over their own learning. Fundamental to this concept is the notion of writing across-the-curriculum where the goal is to improve student learning through the effective use of language (Beane, 1991; Casanova & Berliner, 1988; Hamilton-Wieler, 1986; Soter, 1987). Teachers need to use thinking and writing strategies to engage students in a cooperative learning process (Johannessen & Kahn, 1991; Karcher, 1988; Soter, 1987).

Although there is a consensus among experts that student writing will improve most when there is a general emphasis across-the-curriculum (Berghoff et al., 1997; Clarke, 1987; Culp, Mc Cormack, & Smith, 1987; Glatthorn, 1981; Hill & Crevola, 1998; Hoff, 1992; Karcher, 1988; Maimon, 1991; Porter, 1986; Prain, 1995; Proctor, 1987; Scadamalia & Bereiter, 1986; Walshe, 1989), little success was achieved in this area prior to the 1990s (Hamilton-Wieler, 1987; Proctor, 1987). Perhaps the failure of cross-curriculum attempts before the 1990s was due to the fact that curriculum initiatives met resistance and failed because they were not properly managed. Two key reasons for implementation failures have been identified (Sensenbaugh, 1989). Firstly, writing-across-the-curriculum (WAC) programs required a basic change in the teacher's role in the classroom requiring them to be collaborators in the students' search for knowledge however, the majority of teachers did not see this as their role. Secondly, the process of writing was seen as being poorly conceptualized. Some saw the writing process as a linear multi-step-process (prewriting, writing, revision, editing and publishing); others viewed writing as recursive and complex where there is a recognition that there are many different kinds of writing and many different strategies for approaching each writing task.

Recognizing that the failure of the cross curricula attempts to improve literacy outcomes was dependent on leadership, arguments have been put forward that English teachers were in the best position to lead. This was because they were seen as having more training and experience in the teaching of reading and writing than others (Bishop, 1987; Culp et al., 1987; Hamilton-Wieler, 1986; Smith, 1988) and were seen as being better placed to meet the bewildering array of demands on time

and expertise (Bishop, 1987). In this context, the English teachers were seen as change agents who would have the experience and understanding of how WAC applied to other discipline areas.

A counter position to the English Department taking up leadership roles in WAC programs (Blair, 1988; Hamilton-Wieler, 1986) is when WAC is seen as being designed, administered and taught equally by all departments, the English Department being just one voice. Science Departments would benefit greatly from participation in a whole school approach to the development of writing competence (Hand et al., 1999; Havel, 1995; Moore, 1994). Whilst there are definitive benefits from such involvement, a debate exists with regards to this approach for developing writing (Prain, 1995). On one hand, there are those committed to the construction of knowledge who have similar beliefs to Prain (1995):

Students should write to explain, to sort out what they understand, to consider alternatives, to respond to and test the written explanations of others, to reformulate ideas in their own words, to speculate about possible explanations and to puzzle over and interpret what others, including past scientists, have thought and written. (p.63)

The above thinking seems to be in opposition to those, like Christie (1987; 1988; 1990), who argue that students primarily need to learn the traditional forms of writing (genre) in science if they are to acquire science literacy (Prain, 1995, p. 63). The author would content that this dichotomy is artificial. Students certainly need to learn genre such as experimental reports and factual essays in a passive voice, but there is considerable value in students using writing for learning, that is, to explain, to explore and to justify (Etkina, 2000; Casteel & Isom, 1994; Prain, 1995; Rivard & Straw, 2000; Van Zee et. al., 2001).

Prior to the 1990s, there was little published knowledge about the teaching of writing competence and there was little knowledge about the role that writing could play in learning. The development of writing competence is not a secondary component of science education, but needs to be an integrative component of any course. Written communication plays an important role in training that leads to a career in science and once in the work force, a scientist's written communication is crucial for the

efficient dispersal of experimental research findings. In addition, until recently science educators have paid little attention to the importance of writing in the learning process. Language plays a crucial role in learning where knowledge about a concept needs to be constructed by the learner. There is now evidence that if science educators used certain writing strategies to teach science content material, then their students' writing competence would improve; and it is highly likely that students' understanding of science content matter would also improve (Hand et al., 1999; Havel, 1985; Moore, 1995; Prain, 1995).

Requiring science teachers to teach writing skills and to use writing as a learning tool as is happening with the introduction of frameworks such as Western Australia's Curriculum Framework (Curriculum Council of Western Australia, 1998), in what is traditionally a subject-orientated system where writing is often viewed as the domain of an English teacher, is equivalent to introducing a new curriculum and these curriculum initiatives often fail. This is why the research reported in this study incorporated the notion of change management where it was asserted that the planning and implementation of a new curriculum initiative needs to draw from change management principles. The study reported in this thesis involved a curriculum initiative where the teachers of social studies, science and English were required to implement a literacy strategy called ERICA using change management principles.

4.5.2 ERICA

Morris and Steward-Dore (1984) are the authors of a learning model called *Effective Reading In Content Areas* (ERICA) which can guide content area teachers in helping their students become more effective readers and writers, and consequently, more effective learners. At the time of this study, ERICA had gained acceptance above other similar learning strategies and eventually formed the foundation for the State of Western Australia introducing the Stepping-Out program. The notion of learning to learn (Brown, Campione & Day, 1981) has signaled a change in emphasis from the concentration on instruction aimed at improving student performance to an emphasis

on instruction that improves students' self-control and self-awareness of their own learning processes.

Although the title would not suggest any involvement with writing, ERICA has a final stage called translation where the students are expected to translate or write about what they have learned from the text. This is not surprising as both reading and writing are interrelated, but as discussed earlier, precisely how has not been conclusively demonstrated (Shanahan, 1997; Soter, 1987). Morris and Steward-Dore (1984) devised their model after examining several reading models that were in existence at the time: Directed Reading Activity (DRA), Directed Reading Thinking Activity (DRTA), and Survey Question Read Recite Revise (SQ3R). Experimentation with these reading models over a five year period showed disappointing results. Teachers still complained about students' poor vocabulary, lack of comprehension, poor note taking skills and an inability to convert print information into words of their own. The authors decided to develop their own model and commenced by asking several hundred teachers, in upper-primary and secondary schools, to list the problems which their students most commonly exhibited in content-area reading situations. A summary of the problems are:

- Students copy out sections of text rather than attempt to translate them into their own words.
- Students can read, but do not understand what they read.
- Available textbooks are too difficult and teachers, therefore, have to tell students the relevant information.
- Students have poor vocabularies.
- Students are able to comprehend reading exercises which their English teachers set them, but do not seem able to transfer this skills into content-area reading situations.

A strategy similar to ERICA is Cooperative Integrated Reading and Composition (CIRC) which combines mixed-ability cooperative learning teams and same ability reading groups to teach reading and writing, and language arts in heterogeneous intermediate classes (Slavin, Stevens & Madden, 1988). Experimental data supported the effectiveness of the CIRC program for increasing reading achievement

of all students. Another example is Stepping-Out, developed by the Education Department in Western Australia (Education Department, 1996) which incorporates much of the thinking found in ERICA.

As with the other reading models, the authors of ERICA devised a framework that consisted of four stages, namely: Preparation, Thinking Through, Extracting and Organizing and Translation, which students are to be "walked through" to gain full benefit. As with all the stages, the authors have not necessarily invented new strategies; rather, their framework enables a classification of already existing strategies so that they can be used in particular way. Instead of describing all the different strategies available for each stage, descriptions of a few key strategies (which are shown in bold print) are given to illustrate the purpose of a stage.

4.5.2.1 Preparation. The preparation stage provides students with a logical framework into which they can accommodate the information they are about to read. It is reading readiness, a term well-known to primary school teachers, but unfortunately, the concept is not well known to secondary teachers who often assume that students are able to effectively use a print resource without prior preparation. Purpose-setting questions, to be answered by students before they commence reading a particular text, are based on the premise that directed reading will be more objective and productive of understanding than indiscriminate reading. However, the authors do point out that the research indicates that the effects are narrowly directed and do not encourage wider, incidental learning.

Hang-the-man is a reading strategy used in ERICA that enables wide ranging purpose setting questions to be set and answered. In this strategy, all students have access to a chapter of a factual text. The class is divided into two and the teacher locates a section of text from which he/she asks a question. This verbal question may be as simple as completing the sentence and locating a missing word or as complicated as requiring students to interpret the information and infer an answer. The students are expected to search the chapter - the skill of skim reading can be taught in this context - and locate the section of text that provides the answer to the question. When students locate the relevant text, they raise their hands. The first

student is identified and required to state the page, column and paragraph when his or her answer has been deduced. If the location is correct, then the student attempts to answer the question. An incorrect answer allows another student on the opposite team 30 seconds to find the correct answer. A correct answer means the opposing team is one more step toward being hung. Being 'hung' means a 12-stroke stick diagram of a person on a gallows is completed where each stroke represents a correctly answered question.

The rules of this game can be modified to ensure that there is a reasonably equal spread of student responses and all students are involved. For example, an efficient reader may answer too many questions. A teacher can require each student who correctly answers a question to wait until somebody else has had the opportunity to respond to a question.

Pre-teaching vocabulary is important because a lack of familiarity with vocabulary is a factor which reduces a reader's ability to comprehend a written message (Morris and Steward-Dore, 1984). There are various ways to pre-teach the vocabulary, crosswords, bingos, and word sleuths are strategies that are commonly used in schools. However, it is only when they directly address the vocabulary in a particular chapter of a text are they useful in an ERICA context.

The construction of a word list, where the student is taught how to identify key words and define them using a dictionary and the context of the text, is a very useful strategy. Words often encapsulate concepts and form the foundation for other strategies used in the latter stages of the ERICA model. Understanding the breakdown of text in terms of the function of headings, paragraphs, sentences and words is useful in predicting meaning. For example, if a student is skim reading, he or she can often determine the overall meaning by just identifying and reading the topic sentence in each paragraph. Several strategies, such as structured overviews, concept maps and graphic outlines, allow a reader to gain an understanding of the overall structure of section of text.

A structured overview is formed from a list of key words. The teacher assists the class, or individual, to arrange the words to show the relationships which exists between concepts. The layout of words provides a visual representation of the topic to be studied. It in a sense provides a schema onto which the student can attach new concepts.

A concept map is similar to a structured overview, but there are some important differences in that the ideas are arranged in a hierarchical manner where the most inclusive concepts superimpose the more specific concepts (Novak, 1996). In addition, a phrase or clause links the concepts showing their relationship. Students would not be expected to construct a concept map in the preparation stage; rather, a teacher would constantly refer to one in attempt to establish the framework onto which the students could attach the new concepts - a type of advance organizer.

A graphic outline is a simple strategy that most students can easily cope with and it is reasonably enjoyable for the students to do. The student constructs a type of map of the text. A single page represents a page of text and the place of headings, blocks of writing and the area pictures occupy are placed onto the page representing their position in the text. With more able students, the teacher can require them to write down the main idea of a particular section of text in a block representing the location of the text on the page. In forcing the students to map the text, it is intended that they establish a mental framework or advance organizer onto which new ideas and concepts can be attached.

4.5.2.2 Thinking Through. This stage is designed to help students better understand a particular piece of text, and also to teach them to search for and synthesize clues which exist within the text. Stewart and Morris-Dore (1984) cited literature that suggested that both primary and secondary teachers did very little to teach students how to comprehend textual information. Well structured activities are required to lead students through the process of gathering and synthesizing information. The close and structured activities that require students to conduct their own crosswords, word sleuths and word bingos are excellent strategies for involving students in the process of extracting meaningful information.

The close is a strategy where a piece of text has certain words deleted and the student is required to read around the deletion and work out a possible solution from the information contained in the text. Students are forced to process the information in the text before they can postulate a word solution. However, Morris and Stewart-Dore (1984) quote research that is inconclusive about the benefits of this strategy, but the author's experience suggests that it is no more or less effective than other conventional methods. Students like it as a variant from other classroom learning strategies, especially when it is not used all the time.

The structure activities center around the key words that are found within a piece of text. The students are required to identify these key terms - this may have already been completed in the Preparation stage. Once the teacher has agreed with the selection, the student is required to use the text to construct the particular worksheet (crossword, word sleuth, ...etc). On completion, the student's work is edited by the teacher. Finally, the student is required to make a final draft which can be used as a worksheet for a future occasion or as a revision activity for the other students.

Different strategies can be used to meet the varying achievement levels in a class; for example, the lower achieving student is given more simplistic requirements for the worksheet. The most important thing to remember is not to accept straight copying of textual information because students need to be forced to think through what they are writing. This can be achieved in small group or individual discussions. Peer editing, where other students read and offer suggestions for improvement, is a useful strategy with higher achieving students. It cuts down the time required to spend editing with certain students and this time can be diverted to those in greater need of assistance.

4.5.2.3 Extracting and Organizing Information. This stage distinguishes the ERICA model from other reading models in that it attempts to show students how to extract and organize information from text. According to Morris and Stewart-Dore, teachers do most of the thinking about how ideas should be organized, rather than teaching students how to organize information for themselves. There are many techniques for

assisting students to organize information, but the author favours note taking and concept mapping.

Note taking can be used to teach the skills necessary to locate a main idea, construct a stem and list points after a colon and simplify concepts down into a form that can be transferred into long term memory. After working through the first two stages of the ERICA model, it is an ideal place to develop student's note taking skills.

Concept mapping is an excellent way to summarize a chapter of a text. Requiring students to construct, instead of exposing them repeatedly to a prepared concept map, leads to greater skill development. Care needs to be taken with low achieving students when first introducing concept mapping and a great deal of assistance is required before students can handle this task by themselves. In the initial stages of learning, a class discussion is very helpful where the general hierarchical nature of concepts is established on the board or overhead projector. The students are then required to connect these main concepts with their own phrases or clauses. As students become more competent, they can be expected to bring proposals to the teacher, either as individuals or in small groups, which are discussed and edited before a final draft is completed. Groups that rapidly master the task can be used as advisers to groups having difficulties.

4.5.2.4 Translation. The translation stage emphasizes the writing process rather than product and draws on a range of theory, research and current practice. Including a writing component in the ERICA model resulted from the authors' belief that reading and writing are complementary language processes. Morris and Stewart-Dore (1984) cite the work of Britton in developing the notion that language is important in learning. Britton draws on the work of a number of cognitive psychologists and views language as the tool whereby people organize their view of the world. Learning by writing involves a partnership between teacher and student where the student is assisted through the different writing stages of pre-writing, drafting, editing and presenting to an audience.

Prewriting relates to any activity that assists or prepares students to write. In this stage, the students' understanding of various concepts is developed. Drafting is where students are expected to respond to a critical review of their work, whether it is from the teacher or another student. Individual or group writing tasks require students to write about concepts that they should have already have understood and logically organized. The critical point to remember about drafting is that as students synthesize various concepts together in their piece of writing, they are actively involved in learning. Although there are many writing tasks that can be set, many of them are too difficult for students who have poor skills. One technique that allows these students to be engaged in writing involves word to picture association. When the translation stage is reached, the teacher and student discuss a section of text. After the teacher writes down a paragraph or two that encapsulates the central concept, the student copies this out, but leaves three or four lines blank between each line of writing. In the blank space, and under each new noun or verb, the student draws a symbolic picture to represent the word. The word, and its associated picture, is placed in a dictionary- a set of at least 26 pages with two pages per letter of the alphabet. Each of the dictionary's pages is divided up into numerous squares to enable the word and picture to be placed in a single square. When the student has finished the translation, the teacher listens to the student read his/her work. It is here that the pictures act as cues to help the student recognize certain key words.

In the editing phase, students offer their work up for critical review. This may be via peer review before the teacher examines it and requires specific correction to be made. The editing stage is where the student learns most about writing (Fitzgerald & Markham, 1987). The frequency of student writing does little to improve their writing if systematic errors are not corrected. Unfortunately, few teachers in the subject areas other than English require their students to correct drafts.

The value of student work is enhanced when it is presented to an audience, whether it is distributing a student's crossword as a revision task or it is presenting a talk about a research topic. In addition, students can learn from the work of other students - not just the factual information, but the process the student went through in completing the required task. The challenge for teachers is to find an audience

other than the students in the class and themselves. This is not easy and requires imagination and a special effort. The presentation to an audience ends the explanation of the translation stage of the ERICA strategy.

4.6 Summary

This chapter has provided the background for the literacy aspect of this study by describing different literacy perspectives or paradigms. A link has been made between these paradigms and teaching practices that can be used to develop literacy outcomes in schools. The view that improvement of literacy is best achieved in a whole school context has been promoted. Research contends that the integration of literacy across-the-curriculum is an effective way to develop literacy skills, including those related to writing competence. The ERICA strategy is described meaningfully against this background.

This chapter focused on the change management of the adoption and implementation stages of the ERICA strategy and attempted to determine the impact the strategy had on teacher behaviour and student writing competence. Chapter 5 describes the methodology used in a naturalistic study where the high school became the focus of a case study.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Overview of Chapter

This chapter outlines the methodological framework used in this investigation. The first section is an overview of interpretive or qualitative research with particular emphasis being placed on the case study methodology. Following this section is a detailed account of the relationship between the data collection and the research questions.

5.2 Interpretive Research

Case study research belongs to the qualitative research tradition (Ary, Jacob & Razavich, 1996; Burns, 2000; Guba, 1981; Lancey, 1993; Le Compte & Priessle, 1993; Lincoln & Guba, 1985; Merriam, 1988; McMillan & Schumacher, 1993; Patton, 1990; Peshkin, 1993; Woods, 1986). Qualitative research is ethnographic in nature (LeCompte & Priessle, 1994; McMillan & Schumacher, 1993; Vockell & Asher, 1995; Woods, 1986), having its origin in a cultural anthropological viewpoint (Jacob, 1987) where there is an attempt to describe, or reconstruct intact, human life. In an educational context, qualitative research aims to understand human experience in a holistic and contextual setting (Erikson, 1986; Husband & Foster, 1987; Jacob, 1987; LeCompte & Priessle, 1993; Patton, 1990; Pearsol, 1987) seeking to understand people's thoughts and meanings, feelings, beliefs and actions as they occur in their natural context (McMillan & Schumaker, 1993).

In this study, the term interpretative will be used in preference to qualitative because the researcher has utilized quantitative data within a qualitative study and such data are seen as complementary (Fraser & Tobin, 1991; Howe & Eisehart, 1990; Lancey, 1993; Lee-Smith, 1987). Interpretative research with its origin in a constructivist paradigm (Guba & Lincoln, 1989; Lythcott & Duschl, 1990) is significantly different from the more traditional quantitative methodology with its origin in a experimental or quasi-experimental design (Campbell & Stanley, 1963). The latter thinking is associated with the positivistic paradigm (Burns, 2000; Guba & Lincoln, 1989; Howe

& Eisenhart, 1990; Patton, 1990). In using the word interpretative, there is an acknowledgment that ethnographic or qualitative research is not an independent discipline, nor as yet, a well defined field of investigation (Compte & Priessle, 1993; Husband & Foster, 1992). There has been much debate about research methodologies (Carspecken, 1996; Firestone, 1987; Howe, 1988; Howe & Eisenhart, 1990; Husband & Foster, 1992; Jacob, 1989; Noffke & Stevenson, 1995). Too great an emphasis on a quantitative approach leads to a narrow focus that can overlook alternative ways of viewing the situation (Lee-Smith, 1987). On the other hand, purely qualitative research may produce a rich description, but questions can be raised about validity and reliability (Burns, 2000). For this reason, this study has adopted a critical perspective, or value orientation, where the researcher does not construct the object of the study; rather, it is assumed that the object of the study can be examined for a large variety of reasons, under a large variety of motivations, and yield the same findings (Carspecken, 1996).

This case study uses both quantitative and qualitative methodologies to critically examine a change that occurred in a Western Australian state high school. A case study (Ary et al., 1996; Burns, 2000; Merriam, 1988; Vockell & Asher, 1995) is one form of research using an interpretive methodology and can be defined as follows:

An examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a special group. The bounded system, or case might be selected because it is an instance of some concern, issue or hypothesis.

(Merriam, 1988, pp. 9-10).

The format of a case study can vary and is dependent on factors such as the purpose of the case study or the nature of the report to be written in the investigation. Merriam (1988) describes four features of a case study which highlight the benefits of this approach for interpretative research. These four features are particularistic - they focus on particular events or situations; descriptive - the end product is a thick description of the phenomena under study; heuristic - they illuminate the reader's

understanding of the phenomena; and inductive - the findings emerge from an examination of the data.

The limitations of a case study design include the time required to complete the investigation, length and complexity of reports, sensitivity and integrity of the investigator, consideration of ethical issues in working in a particular setting, reliability and validity of data, availability of the client group, interactive effects of the observer and the client, and generalizability of findings (Merriam, 1988).

With the proliferation of qualitative methods in educational research has come controversy about standards for design and conduct of research. Howe and Eisenhart (1990) suggest five general standards that can apply to educational research. There should be a strong fit between research questions and data collection, an effective application of specific data collection and analysis techniques, an alertness to and coherence of background assumptions, an overall warrant, and value constraints.

This consideration of standards has led to the development of alternatives to experimental and quasi-experimental notions of validity and reliability. Interpretive researchers tend to use different conceptualizations: truth value is used instead of internal validity; applicability or transferability is used instead of external validity; and consistency or dependability instead of reliability (Butler, 1984; Guba & Lincoln, 1989; Lincoln and Guba, 1985; Merriam, 1988).

5.2.1 Truth Value

The truth value deals with the question of how one's findings match reality (Merriam, 1988). Do the findings capture what is really there? Are investigators observing or measuring what they think they are measuring? To improve the truth value of the data collected in qualitative studies, case study researchers (LeCompte & Goetz, 1993; Lincoln and Guba, 1985; Merriam, 1988) use strategies such as:

- Triangulation. This is where dissimilar methods of collecting data are employed so that the flaws of one method are possibly compensated by the strengths of an

alternative. By combining them, the best of each can be gained. Triangulation may use multiple investigators, multiple sources of data and multiple methods to confirm the emerging findings.

- Member checks. Participants in the study are asked to comment on the data and the interpretations.
- Long term observations or repeated observations over a period of time.
- Peer examination of findings.
- Participatory research. The participants are involved in all phases of the study.
- Clarification of the research's assumptions, world view, and theoretical orientation at the beginning of the study.

In this study, particular use was made of triangulation, member checks, repeated observations and peer examination, but a special emphasis was placed on triangulation. More specifically, methodological triangulation (Butler; 1984) was used where more than one method was used to triangulate the information collected and was used to construct a plausible explanation of the phenomena being studied (Mathison, 1988).

5.2.2 Applicability or External Validity

Applicability or external validity of a study is concerned with the generalizability of findings from one situation to another (Burns, 2000; Merriam, 1988; Woods, 1986). Guba and Lincoln (1985) prefer to use the term transferability instead of generalizability. In literature concerned with generalizability, this notion ranges from an exclusively idiographic position where there is just a description of a particular situation to a nomothetic position (Jacob, 1989) where the researcher attempts to be comparative or theoretical (Woods, 1986). For example, a nomothetic researcher interested in a curriculum innovation may choose to carry out extensive studies in several schools; then as the study reveals certain particular aspects of interest concerning the innovation, widen the sample of schools. In this study, a seemingly idiographic position was adopted in that the author was seeking to study the implementation of an innovation at a particular school site, but the utilization of an educational change framework (Fullan, 1982) provided a nomothetic dimension.

5.2.3 Consistency or Reliability

Consistency relates to the extent to which the findings of a study can be replicated. In an ethnographic context, the words consistent and dependable are used when discussing the reliability of interpretative research (Burns, 2000; Lincoln & Guba, 1985) because what is being studied in education is assumed to be in flux, multifaceted, and highly contextual (Merriam, 1988). The emergent design of a case study precludes a priori controls; thus achieving reliability in a traditional sense is not only fanciful, but impossible.

5.3 General Discussion of Interpretative Data Collection Strategies

As interpretive research, this study made use of both quantitative and qualitative data. The quantitative data collection and analysis has taken into account the appropriate statistical issues of validity and reliability and these are described where appropriate within the text. Qualitative data collection methods included field notes, interviews and participant observations which were employed in a way that enabled triangulation to take place.

5.3.1 Field Notes

Many observations have to be made across a range of situations before analysis can begin; recording field notes that can consist of jottings during the day sufficient to jog memory on what one has seen and wishes to record, and more extensive notes written up later (Burns, 2000; Vockell & Asher, 1995; Woods, 1986). In this study, field notes were recorded in a hard covered exercise book. Information about key events was recorded and supplemented by minutes of meetings and documentation such as key letters or memos.

5.3.2. Interviews

The interview, the favorite tool, or major form of data collection, of the qualitative researcher (Ary et al., 1996; Borg & Gall, 1988; Burns, 2000; Husband & Foster, 1987; Vockell & Asher, 1995) involves a face-to-face verbal exchange in which information and expressions of opinions or beliefs are drawn out from the respondents (Husband & Foster, 1987; Lythcott & Duschl, 1990; Merriam, 1988; Woods, 1987). Interviews have been classified most frequently according to their degree of structuring or standardization. Three types of interviews have been identified consistently. Scheduled-standardized interviews usually consist of an oral form of a written survey. Non-scheduled standardized interviews are frequently referred to as focus interviews where certain types of information are desired by the respondents, but neither the exact wording, nor the order of questions is determined ahead of time. Nonstandardized or unstructured interviews have no predetermined set of questions and the questions are not asked in any specific order (Borg & Gall, 1988; Husband & Foster, 1987; Merriam, 1988). This study mainly employed scheduled standardized interviews because the observed change was being studied from a framework perspective. However, some data instruments used were a hybrid between a survey and scheduled standardized interview.

5.3.3 Participant Observation

Direct observations of a participant in the study provided the opportunity to become intimately familiar with the people being studied (Ary et. al., 1995; Borg & Gall, 1988; Burns, 2000; Husband & Foster, 1987; Scott, 1988; Vockell & Asher, 1995). In this context, immersion is a key concept and it is essentially a commitment on the part of the researcher to adopt the perspective of those studied by sharing in their day-to-day experiences. Participant observation can be considered a research tool when it serves a formulated research purpose, is planned deliberately, is recorded systematically and is subjected to checks and controls of validity and reliability (Borg & Gall, 1989; Merriman, 1988; Woods, 1986). Four participant-observation roles have been identified: the complete participant, the participant as an observer, the observer as a participant and the complete observer (Ary et al., 1996; Borg & Gall,

1989; Husband & Foster, 1987). In this study, the author acted as a participant observer where he made his presence known and attempts were made to form relationships with others so that the people being studied served as both respondents and informants.

5.4 School Information

The study focused on a major regional centre situated in an industrial and geographically isolated part of the North West of Western Australia. This town had all the major government services, including the Education Department's regional Education Office. Located in a mining and pastoral region, the area is subjected to extreme heat and cyclones in the summer. A state run senior high school services the town's 15,000 population. The following background information, found in the High School's 1990 Priority Schools program submission, provides an insight to the local community, the staff and the students at the time the study was conducted.

5.4.1 The Community

The community is characteristically multicultural with a large population of Aboriginal (approximately 20%) and Islamic minorities. There is low unemployment (approximately 4-5 %) with both parents generally working. Shift workers are common place amongst mine workers, engine drivers, airport workers, hospitality workers and hospital workers. In such a transient and work-orientated community, many parents lacked a commitment to education and the school had a low standing in the community.

5.4.2 Teaching Staff

There were 65 teachers and ancillary staff in the school with about one third to half of them being in their first or second year of teaching. The senior staff were generally highly competent, taking up their first promotional positions through a merit basis selection process. There was a 30-50% annual turnover of staff because of the

minimum 2-year requirement of service. Young teachers were gaining permanent status and then moving to better social environments.

With reference to this study, the focus was on the English (n=6), science (n=5) and social studies (n=5) teachers with the study determining the extent to which they assimilated ERICA into their teaching practice.

5.4.3 Students

There were some 39 different nationalities or ethnic backgrounds represented in a very transient student population. At the time of the study, approximately 100 out of 730 students spoke a language other than English at home. About 20 % of these students were Aboriginal with many of them coming from remote communities near the town. There were approximately 160-200 students in each academic year.

5.5 Data Collection Within The Study

There were three main levels of investigation in this study where data were collected to answer the four research questions. They relate to the:

- Decision-making Process. This level related to Research Question 1: What led to the adoption and implementation across-the-curriculum of the ERICA strategy?
- Impact on the teacher. This level related to Research Questions 2 & 3.
Research Question 2: What were the significant resisting and driving forces involved in the organizational change?
Research Question 3: To what extent did the teachers assimilate ERICA into their teaching practice?
- Impact on student outcomes. This level related to Research question 4: Was there a significant improvement in student writing competence over the duration of the study?

Both quantitative and qualitative data were collected to address these questions.

Details of the numbers of staff involved and the sources of data are detailed in Table

5.1. The quantified data were used to determine the extent of change or difference between years of implementation or groups involved in the study; for example, essay writing data were collected to determine if there was any significant difference in essay writing skill over the three year duration of the study. Observations in the form of field notes, surveys and interviews were made with some efforts to quantify certain components of this qualitative data so that comparisons could be made between the years.

5.5.1 Decision-making Process

A rich description of the school's decision-making process that led to the adoption and implementation of the ERICA strategy required data to be collected by means of a journal of events (field notes), interviews and official records, enabling triangulation to be achieved and provide a response to Research Question One.

5.5.1.1 Journal of Events. A booklet form of the field notes where the pages have been numbered is called the Journal of Events (JE) and reference to it is made by first listing JE and then a page number; for example, JE22 refers to page 22 of the Journal of Events. The author kept the Journal from the beginning of 1989 until the end of 1990, during which time decisions were made to adopt and implement the ERICA strategy. Impressions of meetings, recordings of important events and general impressions were made (see Appendix B).

5.5.1.3 Interviews. Non-scheduled standardized interviews were conducted at the end of 1990 and 1991, involving staff from the administration and from the departments of English, science and social studies that were critically involved in the adoption and implementation of ERICA. Interviews conducted at the end of 1990 attempted to record the impressions of staff in how the ERICA program developed. They commenced by identifying the person's involvement, moved onto general impressions, focused on identifying the resisting and driving forces and then ended with each person's thoughts for the future development of the project.

Table 5.1 page 1

Table 5.1 page 2

The 1991 interviews focused on the impact of the ERICA Coordinator on teacher activity. They attempted to identify the key factors behind her success and the extent to which staff had become involved in the implementation. Hence, there was some discussion on resisting and driving forces; again, the interviews concluded with a discussion about the future.

Two levels of interviews involved those of personnel holding administrative positions which impacted on the implementation and classroom teachers implementing the strategy or who could add valuable insight to the attitudes of teachers who were not involved in the induction program. Examples of transcripts of these interviews (see Appendix C) are presented in numerical order. Following the number, the interviewee is given a job title and there is a reference to the time of the interview. For example, Interview 1 is that of the Principal at the school at the end of 1989. Each interview consists of summary answers to key questions. Some of the questions have been reworded and much of the text has been summarized in the author's words. The time taken to answer each question is shown in a bracket after each question. These times are referenced from when the first question was asked. When a transcript provided critical information, then both the author's questions and the interviewee's responses are written as spoken. Information from the interviews that relate to aspects of the text are coded; for example, (In3Q5) indicates Interview 3, question 5.

5.5.1.4 Official Records. Official records included documents that were produced by the school or district office, such as the 1988 Needs Assessment conducted by District Office staff. The information published in this booklet was used in the school's 1989 School Development Planning where literacy was identified as the main priority.

5.5.2 Impact on the Teacher: The Implementation

The second component of the study is concerned with the impact of a decision made by the school's governing body to adopt and implement ERICA on the activity of the

teacher. Two research questions related to this component of the study: Research Question 2 sought to identify the resisting and driving forces that related to the adoption and implementation of the ERICA strategy; Research Question 3 related to the extent to which the teachers assimilated the ERICA strategies into their classroom practices.

5.5.2.1 Resisting/ Driving Forces. In managing the implementation of ERICA, a process was undertaken to identify the resisting and driving forces. Triangulation was achieved using three data sources: staff surveys, staff interviews and the Journal of Events.

Staff Surveys. These were administered to 20 staff from the departments of English, science, social studies and educational support and sought to determine the resisting and driving forces that impacted on the implementation, and in greater detail, the teachers' attitude towards assimilating ERICA into their classroom practices.

In relation to developing a survey instrument to identify resisting/ driving forces, the author discussed the possible implementation of the ERICA with some staff and attempted to gauge the feelings that they had towards a whole school approach to the development of writing competence. From this meeting, and knowledge of forces that resist curriculum change (Richie, 1986), the *Restraining Forces Survey* was constructed and administered to the 20 staff that attended the preliminary inservice, held in March 1990, for the ERICA strategy. Teachers were required to rank the restraining forces in terms of their perceived significance, but had difficulty because they saw many of the restraining forces as having equal significance and many as being irrelevant. As a consequence of this initial attempt, the list of restraining forces was reduced to eight - those perceived as the most significant (see Appendix D).

At the end of an initial training inservice of interested teachers, as part of the implementation program, the second survey was administered. The teachers were required to rank the eight resisting factors from the least to the greatest in terms of their perceived negative impact on the implementation of the ERICA strategy. The data of the 20 respondents to Resisting Forces survey were analyzed by using a

preferential voting system to reduce the forces down to those considered most significant by the staff involved.

At the same time as the resisting forces survey was being conducted, 20 English, science, social studies and educational support teachers were asked to complete a survey to determine the driving forces for the ERICA implementation (Appendix E). This survey sought to determine the teachers' exposure to ERICA prior to the initial seminar and to determine the advantages that each teacher saw in the ERICA implementation after the seminar had been completed. The data from the resisting and driving forces surveys were used by a committee to plan the implementation of the ERICA strategy in the different departments.

Teacher Surveys 1990/1991. A survey (see Appendix F) conducted in November 1990 to determine teachers' perceptions to the ERICA strategy was developed from the data derived from the driving forces survey (see Appendix E) which had sought to establish teacher use of ERICA and the initial perception of teachers toward ERICA. The perception component of the survey centered on two main themes: Firstly, the importance that the teachers placed on the strategy and secondly, the satisfaction that was gained from the use of the strategy in the classroom. Importance centered on the educational worth of the strategy, encompassing such things as the improvement of writing skills and the assistance to students gained from the strategies that help them re-construct the knowledge contained in texts. Satisfaction was more concerned with the value of the strategy in improving lessons, namely adding variety and making the lessons more enjoyable and interesting for both students and teachers.

A slightly modified version of the survey conducted in November 1990 was administered in December 1991. These surveys enabled a comparison and enabled a determination of the extent to which there had been a change in attitude as a consequence of the intervention planned by the ERICA committee and the work of the coordinator who was appointed in 1991. Additional data related to the background of the teachers was needed so that the results could be interpreted in light of the experience of the teachers involved.

As a consequence of previous information collected by the author in the literature, personal experience and being in the school throughout the duration of the implementation, the survey was constructed to determine how accurate the author's perceptions were on the value of the ERICA strategy to the teacher. Questions, with attached scales and corresponding to the categories listed in Table 7.3, were constructed and incorporated into the teacher surveys that were carried out in November 1990 and December 1991. The raw data for each domain was analyzed after being converted into a coded form with a class interval of 1. In reference to the scale, Strongly Agree had a value of 2 and Strongly Disagree a value of -2. The means and standard deviations for each factor were calculated using the coded score method (Minium, 1970). In comparing the data from November 1990 to November 1991, a student t-test was conducted for each factor to determine if any change had occurred in teacher perception during this time. A student t-test is equivalent to an analysis of variance of two subsets (Minium, 1970). The computation for the t-test was done using the separate variance model (Popham & Sirotnik, 1973, p. 139) because there were no matched pairs or two measures for the same individual. Hence, it was assumed that there was no relationship between the set of teachers in 1990 (n=19) and those in 1991 (n=21).

Staff Interviews. The non-scheduled standardized interviews conducted with staff were used to identify resisting and driving forces to the implementation of ERICA.

Journal of Events (Field Notes). The field notes about key events were recorded in a hard covered exercise book and supplemented by minutes of meetings and documentation such as key letters or memos.

5.5.2.2 Assimilation of ERICA Strategies into the Classroom. In determining how the classroom teachers responded to the opportunity to implement the ERICA strategies into the classroom, triangulation was achieved with a staff survey, student survey and classroom observations. The Journal of Events and the staff interviews provided additional supporting information.

Staff Surveys. There were two types of staff surveys administered to the English, science and social studies teachers (n=16). The first sought to determine the perception of the frequencies that strategies were used within the classroom (see Appendix G). Teachers were asked whether students had been exposed to strategies corresponding to the four ERICA stages - Preparation, Thinking Through, Extracting and Organizing and Translating – each of which has approximately ten strategies.

The second type of teacher survey data was initially collected from the first component of the driving forces survey (see Appendix E), with this data being a measure of the teachers' perception of whether their students had been exposed to the ERICA strategy by them. The driving forces survey (see Appendix E) was administered in March 1990, the ERICA teacher survey (Appendix F) in November 1990 and a slightly modified version of this teacher survey in December 1991. The data from these surveys enabled a comparison over time of the perception of exposure to the ERICA strategy between the teachers from the subject areas of English, science and social studies.

Student Survey. The student survey (see Appendix H) was identical to the ERICA staff survey (see Appendix G) and required students to indicate a perception of the frequency of exposure to a particular strategy: N- never seen the strategy; O- occasionally seen the strategy i.e. once or twice a month; F- frequently see the strategy i.e. once or twice every two weeks; A- always see the strategy i.e. once or twice a week. The survey was conducted in late November in the years 1989, 1990 and 1991. The same TAGS (Teacher Assisted Groups) or Form Classes were surveyed each year, but in 1991 two TAGS, which had been part of the previous two years surveys, were amalgamated into other TAGS and did not participate. Having the same TAGS involved each year meant that, except for the new Year 8 students entering and the previous Year 10s leaving, basically the same students were involved in the survey.

Each student's survey response was quantified and the data imputed into a Microsoft Excel spreadsheet, with the above codes N, O, F and A being 1, 2, 3 and 4 respectively. Forty strategies were surveyed: 9 for the preparation phase, 10 for the

thinking through phase, 12 for the extracting and organizing phase, and 9 for the translation phase, enabling a comparison of means between the different years. The argument being, that if teachers were implementing the ERICA strategy, then students responses for each strategy should register as a higher numerical value. A strategy by strategy comparison would enable a determination of whether there were any statistically significant differences between the different years. An analysis of variance (ANOVA), conducted using an SPSS package treated each strategy as a separate variable. Hence, 40 variables were tested to see if there was any statistical difference between the years 1989, 1990 and 1991 for each variable (Wonacott & Wonacott, 1972).

Observations. In Terms 3/4, 1990 detailed observations were made of an English teacher's and a science teacher's teaching with it being known that they were attempting to implement ERICA. These observations were analyzed and compared with observations made on the teaching of a social studies teacher who had not participated in the ERICA inservice program. Similar events were expected to occur in the science and English classrooms; the social studies classroom was expected to provide a traditional picture of a secondary classroom based on knowledge of that teacher.

An observation schedule (Appendix J), developed from the work of Bigelow (1971) and Rennie, Parker and Hutchinson (1984), was designed to determine what was happening in terms of student activities related to ERICA. A classification system of the ERICA activities was developed where strategies were placed into five categories: Discussion, Preparation, Interaction, Organization and Translation (see Appendix I). Each strategy was given a code. During an observation, the observer reviewed a 5-minute period of class activity and then entered a code in a box to indicate the predominant thing that has happened during that time. After three sets of 5-minutes, the observer described in words what had happened in the previous 15-minute period.

A measure of reliability for this instrument was gained when two sets of concurrent observations were compared using a Chi Square statistic. An adjustment for continuity was made by subtracting 0.5 from the absolute value of the numerator

contribution to each cell (Popham & Sirotnik, 1973). This nonparametric test was used to determine if there is any significant difference between the scores of the two observers with a trial yielded a value of 1.25 with 6 degrees of freedom at a 98% confidence interval. There was no statistical difference between the observational scores of the two observers. In this case, an attempt was being made to determine if there was any statistical difference between two sets of observations of the same classroom lesson where there were multiple 5-minute segments when observations were recorded. In applying this test, it was assumed that the observations were being made of a distinct reality; hence, the difference between the two sets of observations was considered a sample of an actual distribution. The evaluation scale use was as follows: A score of 3 meant an exact agreement whereas a 0 score indicated total divergence in observation. A score of 2 (good agreement) indicated that there was a difference in the code recorded, but obvious agreement in reference to the activity the code represented. Support for this assessment came from the additional comments recorded. When a 1 was recorded, the poor classification indicated that there was some connection between observations, but the link was not strong.

5.5.3 Impact of the Intervention on Student Writing Competence

This section relates to the impact teacher activity had on the activity/achievement of students in writing competence. A clear distinction needs to be drawn between evaluation and assessment. Evaluation is concerned with finding value (Hansen, 1996) and not just making an assessment on competence against a standard (Belanger, 1985; Faigley, 1989; Greenburg, 1988; Hansen, 1996; Taylor, 1988). Evaluation can include comparison, instructional planning, monitoring of progress and feedback to students (Isaccson, 1988).

In this study, a longitudinal procedure was conducted where student writing competence was assessed over a three year period. The aim of this component was to determine if there had been a statistically significant improvement in the student's essay writing competence over the duration of the study.

At this point, it needs to be made clear that in this study the word assessment took on a specific meaning. An assessment was a procedure to make a measure of student writing competence against a particular standard. There was a clear recognition that a conflict exists between being a mentor and being a judge (Berlanger, 1985). Using traditional methods to grade students' written composition forces evaluators to undertake simultaneously the two incompatible tasks of responding and assessing. The major difficulty with responding to and assessing written compositions at the same time is that the grade a paper receives dictates the kinds of comments an evaluator can make; for example, how many suggestions for improvement are required to justify a failing grade?

The evaluation of writing is more than the assessment of writing competence by assigning a grade (Hansen, 1996; Isaacson, 1988; Jeffery, 1986; Wyatt-Smith, 1997): it can be used to find value in the content of writing, to promote growth and to lead to a re-think of the role of the teacher who value themselves as learners. There are two facets to valuing the content of writing. Firstly, finding value in a student's writing is ensuring that they receive an appropriate response when their work is exposed to others. The writers expect various listeners/ evaluators to find value within the information or narrative they share. A diverse response by the audience helps the writer consider whether there are possibilities of different interpretations adding to the value of the writing. Secondly, there is a need to help students to find value in the content of literature. When students are exposed to a piece of literature, there is an expectation that the teacher will respond to a book in the same way they do to the writing in their class. Here, students are being thought of as writers and being treated in the same way as professionals. They are involved in process where they are learning to become a successful participant in society (Jeffery, 1986; Wyatt-Smith, 1997).

The second function for writing evaluation is to promote growth in the students' writing. This will involve identifying unsuccessful writers and planning instruction to address specific needs (Isaccson, 1988). In all this, there is a desire for the students to become articulate about what they do well. As writing is complex, encompassing many aspects of literacy including reading, sketching and interviewing, the student

becomes enmeshed in complicated issues. Their growth as a person is inextricably linked to the literacy development. Evaluation should have an individual on a developmental continuum where the teacher is assisting the student to develop in particular areas with specific goals in mind.

The final facet of evaluation relates to a re-think of the teachers' role. In an environment where evaluation is being used for growth, the teacher becomes the chief learner alongside the students. There is a need for a teacher to improve their personal skills and learn to motivate and guide students as they facilitate the learning process.

In this study, the assessment focus was on gaining a direct measure of student writing competence and not on improving the students' writing ability (Benton & Kiewra, 1986; Breland & Gaynor, 1979; Crocker, 1987; Isaccson, 1988; Miller & Crocker, 1990; Peckham, 1987; Spandal & Stiggins, 1981). Although the ERICA strategy aims to improve writing competence of individual students in an ongoing manner, the study sought to gain distinct measures that would indicate any overall improvement in writing competence in the student population. This measure did not provide immediate feedback to students to improve their writing competence; nor did the measure suggest that teachers were not using evaluation methods to improve individual writing competence.

In this study, the direct writing assessment was based on Mosenthal's (1983) model of writing competence. Mosenthal recognized a lack of a writing paradigm and attempted to define writing with a context pyramid, having the following five contexts:

5.5.3.1 The Writer Context. The writer context is concerned with the uniqueness of a particular writer or group of writers. For example, in the writer context, one might descriptively define writers in terms of age, sex, background knowledge, intelligence, reading ability, scholastic ability and grade level in school as well as in terms of processes writers use to produce written text.

5.5.3.2 Materials Context. There are two aspects to the Materials Context. The first is related to some physical input acting as a stimulus for student writing. For example, significant aspects of text may include the number of propositions, the theme and episode structure. The second component of the materials context is the writer's text output (i.e., the actual text the students read).

5.5.3.3 Task Context. The task context is related to some directive for writing. For example, directives representing the Task Context might be to write a short story about flowers, summarize this book, or write a description about what you did during your holidays. In addition, the task context includes specifications of criteria that define whether the writer used appropriate procedure and whether the writer achieved the appropriate goal specified by the directive.

5.5.3.4 The Situation Organizer Context. The two aspects of this context are the person responsible for having the writer write and the audience for whom the writer is writing. When considering the situation organizer, a researcher would take into consideration the person's age, sex and authoritative power.

5.5.3.5 The Setting Context. The setting context is where the writer writes and where the situation organizer prompts and evaluates the writer's writing. Hence, one might characterize different types of writing in terms of whether it was done at home or at school, in a group or individually. In addition, one would assess the physical distance between the situation organizer and the writer.

To conduct a direct writing assessment, there was a need to exert a degree of control on the environment in which the essays were written. An attempt was made to fix all contexts so that a direct measure of writing competence could be made of all students engaged in the study. Students were required to write essays on a major theme of a completed unit of work that constituted approximately a 10 week period of instruction. The focus of the writing assessment was on units from social studies, English and science that all students would need to complete in order to finish their lower school education at the end of Year 10. Each unit had a specific essay topic that was related to the central theme of the unit. For example, science unit 1.1 - The

Process of Science- was an introduction to science that looked at what science is and how a scientist works. Topics such as scientific equipment, making observations and measurements are covered. The essay that students were required to write after they completed science unit 1.1 was written on the topic: "What does a scientist do?" In this situation, there was a degree of control over the materials, situation and setting contexts (Mosenthal, 1983). A comparison was being made between year groups over a three year period.

The degree of control existed, based on Mosenthal's model, because:

- Each student was writing under the same setting. The subject essays had to be written in a 20 minutes time frame under examination conditions (Task and Setting Contexts).
- Each year was compared on the same units where students were asked to write on the same essay topics which related to the main theme of the different units (Task and Setting Contexts).
- Each group of students would have been drawing on a common pool of subject knowledge as they wrote their essays (Material Context).
- Each student was also required to complete a Test of Logical Thinking (TOLT) (Tobin & Capie, 1984) to account for the difference that might arise between scores on account of natural cognitive ability rather than through the instruction delivered through the literacy strategies.

The essays were rated in the manner described by Havel (1986) who based his work on Breland and Gaynor (1979): Two raters holistically assessed the essays on a six point scale (Benton & Kiewra, 1986; Greenberg, 1988; Messina & White, 1992; Miller & Crocker, 1990; Spandel & Stiggins, 1981). Raters were trained (Crocker, 1987) as it is recognized that such training impacts upon the reliability of the raters. If there was a difference between the raters that was more than one point on the scale, then a third rater moderated. The validity and reliability issues of this methodology were addressed in the study conducted by Havel (1985) which are consistent with the findings of Benton & Kiewra (1986) that holistic writing correlates with other measures writing ability (Crocker, 1987). Measures of interrater reliability were gained by conducting a correlation between the raters.

An analysis of covariance, with TOLT scores acting as a covariate, was conducted using an SPSS program to determine if there was any statistically significant improvements in student essay writing competence with time. A second analysis was conducted to determine whether there had been any improvement in writing competence of individuals over time. A Student t-test was conducted on a set of paired essay scores extracted from the overall data-base. The identified students had two essay writing competence scores determined a year apart, enabling a comparison of scores to see if there had been an improvement in writing competence over time. Such an outcome would be supportive of any claim for improvement in overall writing competence.

5.6 Summary

Chapter 5 has outlined the methodology of how the data to answer the research questions was to be collected. Chapter 6 utilizes the educational change framework to answer Research Question 1 by examining the processes involved in adopting and implementing the ERICA innovation. Chapter 7 focuses on the remainder of the research questions and utilizes the various data collection and data analysis procedures outlined in this chapter.

CHAPTER 6

THE ADOPTION AND IMPLEMENTATION OF ERICA

6.1 Introduction

This chapter presents the analyses of the data collected to answer Research Question 1: What were the significant events/ factors that led to the adoption and implementation across-the-curriculum of ERICA. An Educational Change Framework (see Chapter 3) was used as a tool to critically review the data collected from three sources of information, namely the Journal of Events, interviews and official records (see 5.4.1). The Educational Change Framework is constructed around four factors, namely the characteristics of the innovation/ change, the characteristics of the school, characteristics of the system and the characteristics of the external environment. The data are reviewed by consulting the Change Framework to determine if the principles and general observations were evident in the implementation of the ERICA strategy in the Western Australian state high school.

6.2 Characteristics of the Innovation

The four major aspects pertaining to the nature of any innovation or change are need, clarity, complexity and quality/ practicability.

6.2.1 Need

The notion of need in a school relates to how necessary a change or innovation is perceived and such needs can be classified as technical, political and cultural (see 3.2.1). The adoption and implementation of ERICA was technical in nature because literacy was a major priority in the school when the proposal related to ERICA was put forward and this affected the overall curriculum in the school. The overview of school development from 1987-1988, which was prepared by the District Office, established literacy as the number 1 Priority for 1989 (JE). The District Office had conducted a *Needs Assessment* where the different sections of the school were

consulted to determine their needs so that a plan could be formulated to address them. The principal (In1Q1; In1Q2) supported the notion *that Language Across-the-Curriculum* gained significance around 1987 and contended that the previous head of English was responsible for the focus on literacy by implementing spelling journals and compact spellers in the high school. At a staff meeting in 1988, a consensus agreement was made by all staff to accept the priorities determined by the *Needs Assessment*, which in addition to literacy, were the Unit Curriculum, Pastoral Care, and personal and vocational education. The author's appointment to the school as the Senior Teacher of Personal and Vocational Education in 1988 placed him in a position to pursue doctoral studies in the domain of literacy (JE:1-6). Subsequently, ERICA became the number 1 priority for the Priority School's Program funding for 1990 (see Appendix A). This move was supported by the principal (In1Q1; JE2) and the need for a coordinator to manage the implementation was described by the acting principal at the end of 1990 (In2Q1&2). The ERICA strategy received \$14, 344 funding and support from the departments of English, Social Studies, Science, Education Support and Personal and Vocational Education. Literacy was a major need in the school and was identified as a priority by parents, students and teachers (In1Q2). Furthermore, without the votes of individual staff members, literacy could not have secured top priority in the PSP funding determination.

Culturally, there was an initial reluctance to adopt and implement the ERICA innovation because of the impost of the Unit Curriculum and a new building program within the school (In2Q3). At the end of 1989, the principal believed that “the teachers did not have the time or, in fact the energy, to implement LAC as a set program” (In1Q1), a contention supported by data from the Resisting Forces Survey (see 7.2.1) which identified the most significant concerns of staff. The lack of time to prepare resources, closely followed by future shock, were identified as the most significant resisting forces as too much curriculum change was already occurring in the school.

However, despite the negative concerns, the staff still saw the need to address the perceived literacy problem within the school based on their assessment of student work within their own classrooms (In12Q6). At that stage in the development of the

school's planning processes, there was no mechanism for the collection of school-wide data, such as a Management Information System, to monitor any improvement of student outcomes from year to year. Early in 1990, the principal changed her mind when it became obvious that the senior teachers were united in their efforts to implement ERICA (In2Q3, JE28).

Teacher support for the project grew stronger and a significant component of this success can be attributed to the efforts of the ERICA Coordinator (In11Q2; In12Q2; In13Q2&3). For example, according to the female deputy principal "70% of staff attended the workshops with somebody attending from every department. Manual Arts and Mathematics were the only departments that didn't fully support the program. They have traditional attitudes to literacy where they don't see language development as part of their brief" (In10Q2).

At the end of 1991, with the senior teachers' strike (JE57) and the resistance of the Social Studies Department (JE36), the prospect of a successful implementation of ERICA was unlikely. However, the ERICA Coordinator successfully engaged staff by being credible (In10Q3; In13Q3), enthusiastic (In13Q3), motivational (In9Q2; In11Q2), well prepared (In9Q1; In10Q3; In12Q2) and willing to follow-up and guide interested staff (In9Q2). In essence, the ERICA Coordinator provided processes where teachers had time to reflect and align their beliefs and teaching practices to what was required by ERICA. In fact, the ERICA Coordinator was of the opinion that the change in teacher mindset came about as a consequence of her "educating them on how much ERICA they were already doing (In14Q3)".

6.2.2 Clarity

Clarity relates to the depth of understanding of a proposed change. Although there may be agreement that change is needed, the adopted change may not make clear what teachers should do differently. Two distinct aspects of this study were concerned with the clarity of goals. Although there was a recognized need for a *Literacy Across-the-Curriculum* (LAC) strategy in the school, those in authority needed to clarify the core elements of a response strategy. The second aspect flows

from the first with each teacher facing the need to clarify the implications for change in his or her classroom practices.

The notion of a literacy problem arose out of the *Needs Assessment* that was completed in 1988. Throughout the early part of 1989, there was little effort put into establishing a LAC program. Seeing the opportunity and having the interest, the author approached the principal and district superintendent for leave to do background reading for establishing a Writing Across-the-curriculum (WAC) effort through Personal and Vocational Education which was the author's area of responsibility in the school. Central office, on receiving supporting letters from the Principal and District Superintendent, granted the author leave for duration of 1989 to develop a doctoral proposal (JE5). Throughout 1989, while remaining in close contact with staff from the District Office and the school (JE6,7), the author conducted widespread reading related to the LAC domain to determine how a school could improve writing outcomes amongst its students.

Toward the end of 1989, several staff from the high school attended a workshop on the ERICA strategy (In4Q1), which captivated many teachers because they saw immediate application to their classrooms. Subsequently, the heads of department of English and Social Studies started to work together to prepare a Priority School's Proposal (PSP) proposal for the implementation of ERICA in their particular departments. The author was informed of this independent move and made contact in an effort to collaborate in the formulation of a WAC program (In4Q2).

When the proposal was presented to District Office staff, a discussion arose as to whether ERICA was too narrow a focus for the development of literacy (JE13). The District Officers argued for a five-year plan for the development of literacy with a broad range of strategies to be used (JE15). The heads of department insisted on ERICA because of their perception that teachers could easily understand and apply the strategy. The author supported the heads of department because of their captivation and commitment to ERICA. Subsequently, an agreement was reached to write a submission for the implementation of the ERICA strategy at the school that eventually gained \$9,000.00 in funding (Appendix A; JE17). The ERICA strategy did

provide clarity of thought and direction in the development of a LAC program. Over a 3 year period, the ERICA strategy established itself in the high school, but little eventuated with regard to the notion of a 5 Year District Literacy plan (JE14) which was supposed to have a wider emphasis than ERICA.

Secondly, there was little clarity about what teachers were expected to do about the literacy problem early in 1989, but the ERICA strategy provided a framework that gave clarity and enabled teachers to address the literacy issue. There was evidence that the teachers were enthusiastic about related aspects of ERICA because it introduced a new variety of teaching strategies, but little evidence to support the assertion that the core elements of the strategy were fully implemented (see 7.3). Teachers seemed to focus on a number of strategies that were effective in engaging students, but few teachers sought to systematically move their students through the four stages of ERICA, namely preparation, thinking through, organization and translation. This issue is discussed in greater detail in the next section.

6.2.3 Complexity

Complexity refers to the difficulty and extent of required change for the individuals responsible for implementation (see 3.2.3). The literacy issue can be a nebulous domain, but the ERICA strategy provided an orderly and compartmentalized approach (In3Q5). Although ERICA is complex, it can be broken down into four stages enabling teachers to quickly gain a broad understanding of the strategy and to grapple with smaller manageable components. As the understanding of the philosophy behind the strategy grows, teachers start to re-think how they will use certain teaching strategies within a learning framework to enhance literacy outcomes. They quickly come to understand that implementing ERICA requires changing how they use these strategies to assist students to unpack a chapter or section of text. Further strength lies in the fact that traditional teachers become exposed to a range of new teaching strategies that shift the classroom dynamic to more student-centered learning. There is the danger, however, that the enthusiasm for the new strategies results in them being used independently of ERICA which was designed to assist students to effectively assimilate the knowledge within the chapter or section of text.

When ERICA was first introduced in 1990, teachers showed a great deal of enthusiasm (In3Q4). They were, however, reluctant to implement the concept because of the impost of the implementation of the Unit Curriculum and the building program and because they perceived that there was a lack of support material (In3Q4; In5Q8). In fact, the Senior Teacher of English stated: “Teacher enthusiasm was low and mitigated against the implementation of ERICA. There were difficulties getting people enthusiastic and then maintaining that enthusiasm. After the initial inservice I was motivated, but was unsure how to apply the new knowledge and needed support. The first induction workshop earlier in the year provided this support and direction for the development of my teaching”(In3Q4). A description of the teachers’ response to the ERICA implementation is found in great detail in the next chapter (see 7.3). The acceptance of ERICA seems to be related to the fact that it provided a structure that was easy to grasp and implement and it enthused the teachers when they were introduced to new teaching strategies that added variety and interest to their lessons.

A dramatic shift in implementation dynamics occurred when an ERICA coordinator was appointed for the 1991 school year. Knowing that the ERICA framework, which gives new meaning to many of the effective literacy strategies that teachers find easy to incorporate into their teaching, she was able to overcome many aspects of the complexity problem by:

- Setting clear goals (In10Q3). She was keen to engage all teachers, engender a degree of commitment and to guide them through a series of workshops. There was an obvious set of objectives she intended to achieve.
- Being well prepared. Numerous staff (In9Q1; In10Q3; In12Q2) noted the quality of presentation at workshops.
- Being able to motivate and encourage the teachers (In10Q3; In11Q2; In12Q1). Many teachers went onto produce resources because of their inherent value rather than for external rewards such as payment (In11Q2)
- Having high credibility (In10Q3; In13Q3). The Coordinator’s credibility was due to her being a successful teacher who knew her work (In13Q3).

- Incrementally implementing the program and providing a high degree of support (In9Q2; In11Q2). She provided a series of four workshops (In10Q1; In14Q1) where the teachers had the opportunity to think through ideas. In between the workshops, she followed up the teachers and assisted them in experimenting with the ideas in the classroom (In9Q2).

Although implementing a complex innovation is fraught with difficulties, the ERICA program was successfully implemented. By end of the third year of the implementation program, most teachers believed they were using ERICA in their classrooms (see 7.3). Further support for this contention comes from the ERICA Coordinator who claimed that around 70% of the staff completed the four workshops (In14Q1).

6.2.4 Quality and Practicality of Program.

Quality relates to the character of the innovation in relation to excellence and practicality relates to the ease of use (see 3.2.4). These two notions are obviously interconnected with issues of adoption and implementation being impacted by both. ERICA is a framework that is easy to apply, especially if the staff are well trained in its application. The section on complexity describes how the ERICA coordinator had considerable influence in motivating and guiding staff in the application of ERICA. There were, however, three main concerns related to quality and practicality, namely the quality of the learning materials, the lack of availability of ERICA packages and the lack of time for the development of resources and for training. These factors inhibited the use of the ERICA strategy in the school.

6.2.3.1 Quality of Books Needed. The available books for the implementation of ERICA were of either poor quality or did not suit the course (In3Q1). Indeed, an initial in-service on ERICA (In4Q1) showed how poorly written science texts were for teaching ERICA, with pictures being unrelated to text, paragraphs lacking topic sentences and little explanation/development of ideas within the text.

6.2.3.2 Lack of Available ERICA Packages. Following the initial ERICA in-service sessions, the teachers perceived that a lot of work was required to prepare worksheets and other resources for using ERICA. Subsequently, considerable effort was devoted to encouraging teachers to produce units of work (In2Q2; In3Q4; In3Q6; In4Q4; In5Q8; In6Q4.). Once produced, these units were seen as becoming a driving force in the implementation of ERICA (In6Q5). Furthermore, some teachers saw the production of units as just normal classroom preparation (In 7Q9; In8Q9). When asked about the lack of teaching resources possibly being a resisting force, a social studies teacher responded: “ERICA is just teaching. A teacher is not teaching unless they are using the program. Unit development / resource production is part of normal teaching. A school should not be paying for the development of units. Teaching institutions should be teaching this before teachers are posted to a school”(In8Q9). However, some teachers were perturbed about the notion of having to prepare packages involving considerable work and wanted to know if there were any commercial packages available. The presenter of the in-service workshops pointed out that some materials had been produced by one of the State's District Offices, but these were unrelated to high schools (In3Q1).

6.2.3.3 Time. Teachers saw ERICA as imposing a great time impost (In3Q6). A lack of resources with a lack of time to prepare resources was identified as the main resisting force in this study (see 7.2.1.1). ERICA packages were seen as requiring enormous amounts of time to prepare and as a consequence of competing priorities within the school (In4Q4; In5Q8; In6Q4), little time was allocated for the task. To overcome this major resisting force, the literacy committee adopted various strategies that sought to provide teachers with incentives to produce packages. A second time issue related to the perceived time cost in moving the students through all of the four ERICA stages. The Unit Curriculum was seen as having a strict content emphasis and teachers perceived that, with limited time to meet certain content objectives, they would be unable to complete their courses if ERICA was used to teach each major concept (In7Q9).

6.3 Characteristics at School Level

There are five characteristics that relate to the impact that school characteristics have on the adoption and implementation of an innovation, namely, the curriculum, principal, staff (teachers), parents and students (see 3.3).

6.3.1 Curriculum

In this study, the high school was making a transition from a curriculum model called the Achievement Certificate to one known as the Unit Curriculum and this was placing considerable time demands on the teaching staff (In1Q1; In2Q3; In5Q8). As a consequence of a time impost, the implementation of the Unit Curriculum mitigated against the implementation of ERICA which was an across-the-curriculum initiative. The acting Science Senior of Science states: “The fact is that ERICA is difficult to implement in the current environment. Writing units is difficult because of available time. There are so many other priorities facing the science teachers that writing units becomes a low priority”(In5Q8). With each teacher’s focus being directed toward meeting the objectives of a particular curriculum unit, there was little incentive to consider an across-the-curriculum initiative. Most units had a heavy emphasis on content with knowledge objectives requiring approximately 80% of marks allocation and teachers experienced difficulty in meeting these within the time constraints of a unit (In7Q9). These contentions are supported by the two main perceived resisting forces that there was not enough time to prepare new resources and that there was a feeling of too much curriculum change already occurring (see 7.2.1).

6.3.1.1 Focus. Several underlying principles behind the implementation of the Unit Curriculum included the specification of student achievement where assessment was criterion based, the provision of student choice where students could assemble a course made up of core and elective modules, and course matched to student abilities.

6.3.1.2 Delivery. Irrespective of whether intended or not, the teachers implementing the Unit Curriculum had been using a traditionalist approach to curriculum delivery in which instruction was mainly teacher-centered as evidenced by the dominance of

teacher talk (see 7.3.4). The two teachers implementing the ERICA strategy had different observational patterns to the teacher that was not, but all three teachers were engaged in some form of discussion around 40% of the time.

An interview (In8) with the social studies teacher identified the fact that his teaching was reliant on a textbook which was not congruent with the ERICA model where strategies are used to help students engage the text and construct their understanding of the content. Rather, the text was used as a resource to assist the teacher to meet specific course outcomes in a traditionalist framework.

A group of teachers using traditional methodology responded predictably to the implementation of ERICA, having positive reflections about ERICA (In7 & In8) even though there was some doubt that the framework was being properly implemented. There was, however, the expected resistance to ERICA due to fears of a time impost for the preparation of materials (see 7.2.1).

6.3.1.3 Structure. The Unit Curriculum was a coherent set of learning segments (units) which was able to cater for individual differences. A student was required to complete a set of core units and was either placed in or chooses a number of elective units that matched their capabilities or educational interests. All students in particular learning areas such as English, Mathematics or Science were required to complete core units in levels 1 to 4, but only the most able students were able to study level 5 and 6 units. For example, all students studying science were required to complete units 1.1 Transition Science, 2.1 Plants and Animals, 3.1 Me and My Environment and 4.1 Energy in the Home, but only the most able went onto to study units such as 5.3 Chemical Change and 6.2 Biological Change. Those students not making the transition to level 5 and 6 units were horizontally extended with units such as 4.2 A Chemical World and 4.3 Water.

Although the intention of the Unit Curriculum was to cater for individual differences, in practice there was considerable emphasis placed on achieving content outcomes. Teachers focused on the particular objectives of their unit and there was little time devoted to across-the-curriculum objectives such as literacy. In this study, the

administration was careful about imposing further teaching requirements on staff because of the preparation time impost just meeting unit requirements (In2Q3). In fact the acting principal stated: “There was a perceived need by the administration for a PSP Coordinator. This person had the responsibility of determining needs within the school. Literacy was identified as one of those needs” (In2Q3).

6.3.1.4 Curriculum Decision-making. During the time frame of this study, the Education Department in Western Australia was attempting to devolve greater decision-authority to schools. Across all schools, principals were being required to assist in the establishment of School Based Decision-making Groups (SBDMG). The members of this group were drawn from teaching staff, parents and students and they had the responsibility of setting the direction and broad educational goals of the school. Implementing the developmental priorities and the day-to-day operations of the school were the responsibility of the school’s administrative and teaching staff. At the time of the study, the SBDMG was in its infancy and played little role in the curriculum except for the endorsement of developmental priorities (In1Q2). Both the parents and staff had recognized that there was a literacy problem (In1Q2).

One component of devolution was a greater emphasis on school-based curriculum development where each school was expected to make units relevant to their particular population; there were no curriculum units for the Unit Curriculum produced by the central office. Schools were required to produce or buy commercial produced teaching resources or participate in cooperative efforts with other schools. This educational direction taken by the Education Department created much stress as the time impost to prepare materials was considerable. The principal was well aware of this impost when the notion of implementing the across curriculum literacy thrust was being suggested (In1Q1; In2Q3).

6.3.1.5 Curriculum Content. As previously stated, the Unit Curriculum was composed of units whose objectives were set by the central office and schools were required to implement them, but modify teaching practices to meet local needs. There was a broad overall curriculum map that delineated the total curriculum and teachers were expected to prepare teaching programs for specific units. Although all units had

components related to assignment and class work which were designed to develop knowledge, skills and attitudes, each learning area had its own teaching emphasis. This direction reflected the assumption that students were achieving literacy outcomes whilst completing course objectives or through meeting the English learning area objectives. Subject teachers generally felt it was their responsibility to achieve specific subject outcomes and lacked the preparation, or lacked the confidence, to implement broad literacy outcomes.

Support for the contention that staff lacked the confidence and energy to implement across-the-curriculum literacy initiatives comes from the resisting force findings, teacher interviews and the Journal of Events. The resisting forces of future shock and misunderstanding (see 7.2.1.2 and 7.2.1.3) support the contention that staff had seen too much change and felt they lacked the time and resources to implement a new initiative. There was initially an obvious misunderstanding of what was expected of teachers in terms of implementing ERICA, but this changed through the work of the ERICA Coordinator. Several teachers and senior teachers expressed the opinion that time, lack of resources and misunderstanding in expectation impacted on the implementation of ERICA (In3; In4; In5; In6; In7). An English teacher states: “Time is a critical factor affecting effecting the production of ERICA resources. The monetary rewards are only part of the answer. Recognizing a teacher’s work is very important”. The Journal of Events contains minutes of meetings where the senior teachers expressed their concerns about the staff’s resistance to implementing ERICA (e.g., JE29).

6.3.1.6 Curriculum Outcomes. Assessment in the Unit Curriculum changed from being normalized in the Achievement Certificate, where a set percentage of students received a particular grade, to a criterion-based assessment structure. This assessment model necessitated the criteria for a particular grade being set before a course commenced; theoretically, all students could achieve the highest grade if they met the criteria.

The educational climate under the Unit Curriculum was more conducive to assessing student performance outcomes, but no facility for across-the-curriculum assessment in

literacy existed. Some indicators were used in the development of the Priority Schools Program application for literacy funding; for example, the submission reports on the percentage of students whose reading ages are above or below those of a normalized population on which the standardized test was developed. However, the school did not have a formalized Management Information System from which to draw annual conclusions about student performance in other aspects of literacy such as writing competence.

6.3.2 Role of the Principal

All major research on innovation and school effectiveness shows that the principal strongly influences the likelihood of change (see 3.3.2). The principal's role has changed dramatically in the last decade and half with changes in the societal context with the expectation that principals are to show strong leadership, create the climate for change and empower others.

In this study, the principal did show strong leadership, standing between those seeking to impose change and the staff who at times were resisting change. She had cooperated with the Education Department of Western Australia (EDWA) in guiding the implementation of the Unit Curriculum and establishment of the SBDG (In1Q2). However, she resisted the initial attempts to introduce ERICA because of the feared impost on teacher time (In2Q3; JE28).

The principal showed a clear vision and communicated that to staff. She was part of the process that led to a needs assessment being completed with staff being extensively involved in the process of gaining a consensus agreement on school priorities. There was a school plan where staff had been delegated clearly defined developmental areas of responsibility and they had been given the freedom to address the issues with a methodology of their choosing. In addition, the PSP process of assigning Commonwealth funds to developmental areas engaged staff in a democratic methodology (PSP 1990 submission). Throughout the implementation, the principal acted as a facilitator and was not authoritarian in her practice.

There was a clear climate for change with regard to literacy, being second to the implementation of the Unit Curriculum in the 1987 School Development Plan and the number one priority for development identified in the *Needs Assessment* and the PSP 1990 proposal. The principal was mindful of the time impost being placed on staff (In1Q1; In2Q3) and was aware that if any change proposal was to be successful, then it needed to be properly supported with resources, personnel and time (In1Q4).

The principal, and those who subsequently took over her role in an acting capacity, empowered personnel to drive the change. Appointing an ERICA Coordinator (In13Q2) and allocating considerable PSP funds to support the implementation process resulted in a very successful induction program being conducted by the Coordinator (In9Q1; In10Q3; In11Q2; In12Q1; In13; In14). In fact, the social studies senior teacher, who had been involved in the program since its inception says of the induction program: “Although the social studies department had participated in the inservices in the previous year, the training by the ERICA Coordinator was the key to change. She had inserviced the departments in their subject meetings with short sessions of about 1/2 hour duration”(In11Q1). Teachers were given training, opportunities for reflection on their teaching practice in relation to ERICA and were motivated through the understanding they gained about the literacy strategy.

6.3.3 Teaching Staff

Teachers are crucial to the education process because they create the climate for learning; without their cooperation, the adoption and implementation of innovations would be difficult, if not impossible. The literature suggests that teachers are willing to be involved in educational change, but are limited by the hectic and isolated working environment that creates the classroom press (see 3.3.3). In this study, the classroom press was being exacerbated by the workload impost created by the implementation of the Unit Curriculum (In1Q3; In2Q3; JE29-31; 36-38). Despite this, teachers over the two year period of data collection showed a willingness to adopt ERICA (see 7.3). As with the implementation of other innovations, the degree to which the teachers embraced ERICA was dependent upon their involvement in

decision-making processes, professional development and the rewards given for endeavour.

6.3.3.1 Participation in Decision-making. Giving teachers a greater participation in decision-making provides a greater sense of autonomy, but needs to be balanced against the time impost it creates. The teachers had considerable input to decision-making in the school with regards to the literacy direction, contributing to the School Development Plan, the *Needs Assessment*, and the PSP submission. Both the School Plan and the Needs Assessment were developed with considerable teacher input and through a consensus decision-making process.

The development of the PSP submission is slightly different in the way it engages teaching staff. PSP funding comes from the Commonwealth, not the State government, and is directed toward Students at Risk (SAR), namely, those students who are not likely to achieve educational outcomes needed to participate effectively in society. A measure of the school's level of disadvantage is made and funds are allocated accordingly. The school has the responsibility of preparing a submission that outlines the programs that will be implemented to address identified areas of disadvantage. Each year a evaluation of these programs is made to determine the extent to which they have been successful.

In the school's PSP submission, various staff prepared submissions for funding for various programs. These submissions were compiled and made available to staff who were required to examine them before voting on their preferences. Although the financial requests exceed funds available, the funds are not evenly distributed. The voting establishes a priority and then each program is funded in entirety down the priority list until the funds are exhausted. Eight programs were funded with literacy (the ERICA proposal) being identified as the top priority, gaining \$14,344.70 out of a possible \$27,308.00.

6.3.3.3 Professional Development. The emphasis on professional development relates to training teachers to undergo change at a school level (see 3.3.3.2). Over the three years of the study's data collection period, professional development was a

major component of the change process. In the initial stages, the senior teachers who eventually developed the 1990 PSP submission attended workshops that led to their enthusiasm for the strategy (In3Q4; In4Q1; In5Q3). Subsequently, specific concerns arose when, for example, the English senior teacher (In3Q1) found preparing work time consuming and that resource purchases was only one way of overcoming the problem. He found that a change toward emphasizing skill development rather than subject content was required.

Nevertheless problems arose despite staff enthusiasm in implementing ERICA under the impost of the time demands of the Unit Curriculum (JE36-38; In4). The senior staff involved in the PSP submission met in May 1990 to discuss how to regain the thrust of the implementation (JE36). An eventual outcome of several planning meetings was a submission prepared by the senior teacher of science for PSP funds to be used for the appointment of an ERICA Coordinator for 1991 (In5Q10). This submission was successful and, as previously stated, the appointment dramatically changed the way the staff received professional development (see 6.2.3).

6.3.3.4 Rewarding Endeavour. To encourage the implementation of an educational innovation, rewards can be extrinsic or intrinsic (see 3.3.3.3). In this study, the main extrinsic reward related teachers being offered monetary payment for the development of ERICA units (JE29,30). Section 7.2.1.4 describe the two different approaches subject departments took in securing the financial reward for the production of ERICA units. Furthermore, the debate that pertained to the success of this strategy showed divided opinion. Interview data from the end of 1991 indicated that by this time the financial offer for the development of units was not a significant issue (In11Q6) because staff were keen to develop their own units irrespective of the financial reward. In fact, not enough money was available for the people wishing to write units (In14Q2). However, there is evidence that the financial reward was an incentive to turn self-developed work into a package useable by other staff members. A science teacher stated: “The money offered to write up ERICA packages was an incentive. I enjoyed developing new worksheets and preparing for the classroom, but needed an incentive to convert that work into a package that was able to be used by other teachers” (In15Q3).

By the end of 1991, the intrinsic rewards offered by ERICA had been recognized and had led to widespread enthusiasm and commitment by most staff. The senior teacher of social studies stated that “teachers are willing to produce their own materials because of their inherent values to their classroom teaching” (In11Q2). This notion was echoed in other interviews (In12Q1; In13Q6; In15Q2).

6.4 Characteristics of System

A system is the governing body of a school or set of schools. Fullan (1982) contends that there is six factors that relate to system effectiveness: the history of innovative attempts; the adoption process; central administrative support and involvement; staff development approaches; the time-line and information system; and board/community characteristics (see 3.4).

6.4.1 Districts (EDWA’s) History of Innovative Attempts

Previous documentation has established that there was a negative psychological history with respect to the implementation of innovations as a consequence teachers being subject to considerable classroom press with the implementation of the Unit Curriculum which necessitated the preparation of new teaching resources requiring a great deal of effort. Additional also were tasks given to teachers in the process of moving equipment and materials into the new premises that were part of a major upgrade of the school's buildings.

Despite the degree of change expected, EDWA had provided few resources, especially teacher time release, to assist teachers in the implementation phase of the Unit Curriculum (In1Q4). The principal was skeptical of EDWA’s past history of providing resources, personnel and time to drive a change (In1Q4). As a consequence of this negative psychological history that permeated the whole school, the attitude of teachers to any further change was expected to be very negative (In1Q1). The resisting force data (see 7.2.1) supports this contention with teachers citing a lack of resources and future shock for their reluctance to implement ERICA.

6.4.2 Adoption Process

The adoption process relates to the decision to implement an innovation (see 3.4.2) where to be successful, a balance between a district perspective (top-down) and school-based (bottom-up) planning needs to be achieved and teaching staff need to be involved in the planning process. This study illustrates that such a balance can be achieved. When the PSP Education Officer had tried to get ERICA into the high school, the idea was resisted by the school's administration and he was surprised by the subsequent senior teacher's initiative (JE28). Although there was initial resistance to the notion of ERICA, close cooperation between the district and the school led to a growing acceptance of the strategy (see 6.2).

6.4.3 District/ EDWA's Administrative Support and Involvement

This component relates to district wide change. The District Office did support and was involved in the implementation of ERICA through the PSP program. The state had the responsibility of ensuring Commonwealth funds were dispensed in a way that addressed the problems of those students identified as being academically at risk. Their guidance in the formation and their approval of the annual PSP budget for the school was vital. Furthermore, in the overall development of the ERICA program in the school, the District Office had placed some of its own personnel allocation directly into the school as part of the author's position which was seen as vital for driving the success of the program (JE13). The Administration team was concerned that approximately half the PSP funds were going to be spent on ERICA. At a meeting with the principal, the deputy principal and the author, late in 1989, the job description of the author in the school for 1990 was discussed (JE13). Although the general emphasis was on the ongoing development of the Management Student Behaviour (MSB) and pastoral care programs, the principal discussed her concerns about the PSP funds and inquired how she could be satisfied that they would not be wasted. The author's time was allocated such that he was able to assist the ERICA implementation: 0.5 MSB Co-ordinator; 0.2 Head of Department Personal and Vocational; 0.1 science and 0.2 duties other than teaching (DOTT). Within the time

allocation, the author had enough freedom to assist, with the other senior teachers, in the implementation of ERICA. Although outside the scope of this study, there was some evidence that the involvement of the high school staff was helping a district wide initiative to implement ERICA. The District Office organized a networking of particular subject teachers and the ERICA Coordinator presented her induction package at networking of Pilbara social studies teachers (In11Q1).

6.4.3.1 Staff Development. In this study, the District Office provided in-service on ERICA where the senior teachers, who eventually established the high school committee responsible for implementation, attended and were enthused (In4Q1). From this start, the high school committee managed the training and staff development within the school (see 6.3.3.2). The appointment of the ERICA Coordinator by this committee through the PSP program (In13Q1) proved critical to the success of this school-based training (In9Q1; In10Q3; In1Q1; In13Q3). The Coordinator had the personal attributes to drive the change and met the requirements of a good change agent.

6.4.3.2 Time-line and Information Systems (Evaluation). The time perspective is one of the most neglected aspects of the implementation process (see 3.4.5). As with other educational changes, a considerable amount of time was expended in the adoption and implementation of ERICA. Of the five year period related to this study, there was the initial 3-year period where the decision to adopt ERICA was being made, followed by a 2-year implementation period. The adoption period extended from 1986, the time when the *Needs Assessment* was conducted, until the 1990 PSP documentation was completed at the close of the 1989 school year. The *Needs Assessment* had led to the development of the 1987- 1988 School Development Plan that identified literacy as a major priority. The 1989 school year was a period when the senior teachers initially attended a ERICA workshop and decided to work toward implementing the strategy in 1990, and writing the PSP submission toward the end of 1989.

6.4.5 Board and Community Characteristics. School boards, or School Based Decision-making Groups (SBDMG) in Western Australian government schools, are vehicles whereby parents can become involved in the education of their children. The

SBDMG in the study was in the preliminary stages of development and had some minor involvement in setting literacy as a developmental priority (In1Q2), but had no involvement in the 1990/91 school year because of the industrial action related to the implementation of *Better Schools* and the Unit Curriculum. Hence, the school community had no involvement in the process of adopting or implementing ERICA.

6.5 The External Environment

In Australia, the main responsibility for education rests with the State Governments. The Commonwealth asserts its interests by providing developmental funds to the states to address areas of national interest. In this study the Priority Schools Funds (PSP) were used to address areas related to Students-At-Risk (SAR) with the literacy issues being the focus of a number of funding proposals. The ERICA strategy attracted \$9000 of the \$27, 308 allocated to the school by the state to address issues related to SAR.

6.6 Summary

Chapter 6 has demonstrated the usefulness of a framework to help an administrator decide on the merits of adopting an innovation and in guiding the subsequent implementation. The four stages of this framework encompass the factors that need to be considered when adopting and implementing any innovation. This study has shown that the factors contained in the framework did affect the adoption and implementation of the ERICA strategy with the framework being the tool used to answer Research Question 1. Chapter 7 responds to the remaining three research questions that are concerned with the impact of the adoption and implementation of ERICA.

CHAPTER 7

THE IMPACT OF THE IMPLEMENTATION OF ERICA

7.1 Introduction

This chapter presents an analysis of the data collected in reference to Research Questions 2, 3 and 4 and documents the impact the implementation of the ERICA innovation had on teacher behaviour which in turn affected the students' attainment of educational outcomes. Research Question 2 focused on identifying the driving and resisting forces that impacted on the decision to adopt and implement the ERICA innovation. Research Question 3 sought to document the extent to which teachers assimilated the ERICA innovation into their teaching practices. Research Question 4 related to the student outcomes and sought to determine the impact that the ERICA innovation had on student writing competence.

7.2 Response to Research Question 2 Concerning Resisting and Driving Forces

Research Question 2 states: What were the significant resisting and driving forces involved in the organizational change? Information from the various data sets were used to identify and confirm the nature of the resisting and driving forces in relation to the adoption and implementation of the ERICA innovation.

7.2.1 Resisting Forces

A preferential voting process was used to narrow down the rankings of 20 respondents from the departments of English, educational support, social studies and science in relation to eight resisting forces (see 5.5.2.1 and Appendix D). This was done over four voting rounds where, in each round, the two resisting forces attracting the most votes of the 20 respondents remained in the voting process. A vote of a respondent not identifying one of the two most popular resisting forces in a round counted as the resisting force with their next highest ranking. Hence, each round served to narrow the list of resisting forces until the two most significant resisting

forces were identified in round 4. The results of the preferential voting rounds are displayed in Table 7.1.

Table 7.1. Results of the preferential voting for the resisting forces.

Resisting Forces								
Voting Rounds	A	B	C	D	E	F	G	H
R1	2		1	1	1	2	5	8
R2	3					4	5	8
R3						4	7	9
R4							8	12

The resisting forces, in order of significance (determined in round 2), were identified as follows:

H: A lack of resources. Respondents expressed a feeling that there was not enough time to prepare new resources and that they would have to be provided if ERICA was to be implemented.

G: Future shock. Respondents expressed a feeling that too much curriculum change was already occurring.

F: Misunderstanding. Respondents expressed a feeling that there was not enough information about the ERICA framework to determine whether or not to participate in the implementation.

A: Lack of Rewards. Respondents expressed a feeling that the change would require a great deal of effort to implement, but they would gain little from it.

The interview data and the Journal of Events supported the outcome of the preferential voting that identified the above four main resisting forces.

7.2.1.1 A Lack of Resources

When faced with a significant workload, some teachers were reluctant to implement the ERICA innovation. A lack of time was identified the main resource affecting the teacher's working environment, especially in preparing worksheets and is supported by four pieces of evidence. Firstly, the way the ERICA committee went about planning the teacher induction to ERICA presupposed that time was a limited

resource. The committee recognized the need to provide incentives for teacher to voluntarily attend after-hours workshops because there was no time to hold such programs within normal school hours (JE20). Secondly, the senior teacher of English, who was one of the main change agents, had difficulty attending the ERICA committee meetings because he had other important responsibilities within the school (JE23) at the same time. Thirdly, the principal was reluctant to agree to the notion of implementing the ERICA framework across-the-curriculum because of the time commitment given to the implementation of the Unit Curriculum (JE28). She claimed that any attempt to implement any literacy innovation would need to be supported with personnel and time (In1Q4). Fourthly, the ERICA committee's lack of direction was due to a number of resisting forces, but time being the most significant (JE29,30).

As a consequence of this lack of time to produce resources, there was a need for teachers to be provided with a friendly set of materials that they could easily adapt and use (In6Q5). The ERICA committee recognized this need and set aside funds to pay teachers to prepare units and to provide time, training and support to convert these units into effective teaching packages. It was felt that the task would be too demanding for a teacher to take on without incentives. Not all agreed with this strategy. The acting senior teacher of science contended that writing the units was difficult because of available time and suggested paying a person without a teaching load, who possessed a imaginative and organized writing style (In5Q8).

In addition to having individuals write units, two departments took different approaches. The English Department chose to encourage individuals to write units and the senior teacher offered advice and encouragement. The science department (JE37) took a team approach and organized different teachers to write the various sections of an ERICA. Paying staff who chose to write in this manner proved difficult because of taxation rules (JE41): a payment could only be paid to an individual and not a group. The members of the group overcame this problem by agreeing to be paid individually, but they then chose to donate the money to finance a science function.

7.2.1.2 Future Shock. When too much happens in a school around a teacher, there is little enthusiasm for new initiatives (In1Q1; In1Q3; In4Q4) - a type of resistance to change called future shock (Richie, 1986). In the initial period of the study, the teachers were suffering from future shock and they were reluctant to implement ERICA because of various factors, some of which have already been described such the conflicting requirements for time and effort required to implement the Unit Curriculum (In1Q1; In2Q3), the lack of resources (In15Q2) and the reluctance of teachers to implement new initiatives unless time was provided for them to think and assimilate new ideas (In7Q9). It is less demanding to continue with established methods.

Throughout the duration of the study a number of symptoms of future shock became evident. Firstly, there was a continuous change in the teaching staff who transferred to other schools (In5Q10; In1Q5). This impact was recognized by the District ERICA committee (LE12) that wanted to establish a five year plan (LE14) to sustain the ERICA initiative in the region and allow expertise to be brought to the region. The loss of experience associated with teacher transfer created its own set of problems because newly appointed staff were not familiar with ERICA and needed to be trained (In5Q10; In6Q4). Some of the new teachers resisted this training because of the impost on their time; for example, the senior teacher of English saw his own appointment as inhibiting the implementation of ERICA, stating: “The challenge for next year is the use of ERICA programs. I was a new appointee this year and the turn over in staff has inhibited progress. There has not been much curriculum development this year, but over the last term teachers have been writing packages to use next year. Now that we have been trained, have direction and the teachers are comfortable with the idea, we are in a position to fully implement rather than just dabble. Next year will be a time of consolidation” (In12Q5).

Secondly, industrial action was a symptom of future shock. The senior teachers’ strike was caused by a change in their job descriptions (JE54) which was exacerbated by the ill feeling regarding the implementation of the Unit Curriculum. There was a feeling that their contribution to the functioning of the school was not being recognized through their Level 3 classification, and as a consequence, they put a ban

on attending meetings outside normal school hours. This decision impacted on the implementation of ERICA and the ERICA committee met to discuss how to take back the initiative lost through the senior teacher's strike (JE57, 58). There was a feeling that the direction for the progressive implementation of the ERICA framework had been lost. Money for the writing of units had not been spent because there had been little encouragement to write the units. For example, in staff meetings time was spent on department issues and not on issues related to the implementation of ERICA. The senior teacher of English saw the strike as affecting the communication between staff, a critical aspect of the whole school implementation of ERICA (In2Q4) that affected the amount of curriculum development. However, some teachers felt that the senior teachers' strike had had little impact on the ERICA implementation (In5Q8; In6Q3).

A third symptom of future shock related to the notion that productive change was seen as being inhibited, or becoming a resisting force, without a change agent. In other words, for ERICA to be implemented, a person was needed to drive the strategy. The deputy principal believed that it was critical to have a coordinator because of the various changes simultaneously occurring in the school (In2Q3) and because of the magnitude of money that had been allocated to the PSP (ERICA) program. The acting senior teacher of science argued also that the success of the ERICA program depended on a coordinator (In5Q10) and he was responsible for the writing a PSP submission that saw the ERICA coordinator appointed in 1991.

7.2.1.3 Misunderstanding. This term captures the notion that teachers had a lack of understanding of ERICA and that it was a major resisting force (In11Q2; In15Q2) was supported by the need for an induction process and the way the teachers applied the strategy. An induction plan was developed by the ERICA committee (JE19, 20) because they assumed ERICA needed explaining and that some teachers would need to change the way they thought and taught (JE14). This contention is related to the shift from traditional teaching to constructivism. In traditional teaching, the teacher is seen as the expert passing on knowledge to the student; whereas, constructivism sees the teacher as a facilitator who assists students to construct their own knowledge. ERICA is designed to assist the student to extract and to construct knowledge drawn from transactional texts.

The second piece of evidence relates to the misunderstandings that teachers showed when they attempted to implement ERICA. Secondary teachers are trained to be subject specialists, with their major emphasis being the teaching of the content knowledge of their subject areas, and they have little training in how to develop basic literacy skills (In1Q1). Although there was an eagerness to use many of the new strategies, there was considerable ignorance with regards to the ERICA stages. At a science staff meeting (JE39), this problem was discussed. The Curriculum Coordinator - who was a science teacher - explained how she had assumed ERICA was concerned mainly with the worksheets until she had had the whole ERICA framework explained to her by the School Development Officer (SDO) from the District Office. Much discussion followed before it was resolved to invite the SDO to a staff meeting where she could fully explain the significance of the stages.

This study showed that considerable effort is required by each teacher to assimilate the concepts that form the foundations for the ERICA framework. The acting senior teacher of science was better informed than most other teachers, but he still needed time and assistance to fully comprehend and implement ERICA in a high ability Year10 class (JE51). His main motivation for preparing a unit was meeting a requirement for a postgraduate course (JE30). Although he was committed to the notion of ERICA, he needed an extra incentive to take time to come to understand

ERICA and guidance to prepare a unit. During the teaching of this Year 10 Science unit, the author was often required to explain and demonstrate ERICA.

7.2.1.4 Rewards. The issue of recognition of teachers' workload was an issue that affected the senior teachers' strike and the attitude of teachers to implement ERICA. The principal asserted that teachers should be recognized for the additional work they were doing (In1Q5) in implementing ERICA and taking on new roles. This type of thinking was supported by the Curriculum Coordinator who believed that recognizing teachers' workloads was as important as providing monetary rewards. She states: "Time is as a critical factor affecting effecting the production of ERICA resources. The monetary rewards are only part of the answer. Recognizing a teacher's work is very important"(In6Q4).

There was clear understanding that the teachers would need resource materials (see 7.2.1.1) to effectively implement the ERICA innovation. Eventually, as an alternative to providing relief time, teachers were offered \$80 to \$100 to prepare exemplary units (LE13). The product was to have a rationale, assessment outline and activity sheets. There was some debate about whether financial rewards would be enough of an incentive to encourage staff to write units. The acting science senior teacher contended that the money was not an incentive to write; rather, the teachers would write because of the inherent value of ERICA. He also felt that assigning the writing task to a person without a teaching load was a better approach (In5Q8). Rather than encourage individuals to write units for financial gain, he organized his staff to write units as a team (JE36, 37) and intended to spend the money on a function to foster team spirit. However, a tax problem prevented the implementation of this strategy because the PSP Coordinator could not pay a group. Subsequently, it was resolved to pay individuals for the writing of units and the individuals would then donate their earning toward the function. Although the senior teacher of science strongly held his particular opinion, not all his staff agreed. A science teacher, who keenly adopted the ERICA framework, believed the financial incentive encouraged him to prepare his existing ERICA work in a format that could be used by other teachers (In15Q3).

7.2.2 Driving Forces

Analysis of the data arising from the teacher surveys, the Journal of Events and the teacher interviews identified two main driving forces, namely, a perceived need to address a literacy problem within the school and the capacity of the ERICA strategy to meet student and teacher needs because of its particular attributes.

7.2.1.1 Need to address the literacy problem. There was an obvious need for a framework or strategy to address the literacy problem in the school. In 1989, the principal contended that everyone knew of the literacy problem (In1Q2), citing the *Needs Assessment* conducted in 1987 by the School Development Officer at the District Office, which identified literacy as the top priority for the high school. Since that time, little advance had been made in addressing the literacy problem because of a number of factors already discussed. Untrained and inexperienced staff lacked the skills and knowledge to effectively develop literacy skills and there was a lack of adequate and suitable resources- especially books, and the demands of implementing the Unit Curriculum. In addition, there was a lack of role definition: Who was responsible for coordinating the response to the literacy problem? Finally, the English senior teacher expressed the view that the size of the problem was so great that it was difficult to know where to start or where to carry on from the previous coordinator's work.

Subsequent goals set for the 1988 school year were:

- Provision of more language resources. This included books for various cultural backgrounds and high interest/ low ability books.
- Professional development. In-service was seen as critical to give staff some expertise in reading, English as a second language (ESL) and small group work.
- More targeting of at risk students.
- Establishment of a literacy committee. This committee was to be composed of interested people from the different subject areas.
- Much more liaison with Year 7 teachers and students in local primary schools.
- Intensive small group work with highly disruptive students.

These goals are commensurate with those of the ERICA strategy. A very positive response to the initial ERICA inservice led to the creation of a District Literacy committee (LE13) and an ERICA committee in the high school (LE10B). The District Committee was composed of staff from the District Office, feeder primary schools and the senior high school (LE13). The ultimate goal of this committee was to strengthen the communication between the primary and secondary schools (LE21), focusing on the transition from Year 7 to Year 8. ERICA was seen as a vehicle to achieve this goal. The high school ERICA committee was responsible for a number of initiatives taken to address the literacy problem in the school. The committee tried to induct all staff about ERICA (LE19, 20) in an attempt to develop a literacy emphasis in the teaching style of all teachers, a unified approach to essay writing (LE22), a unified library assignment procedures (LE 20,22 &31) and a uniform note taking procedure (LE20). The ease at which the ERICA framework was adopted was due to own characteristics - the second main driving force.

7.2.2.1 Qualities of the Innovation. The ERICA strategy provided a vehicle to address the perceived literacy problem in the high school. Following an inservice in March 1990, that explained the strategy, a staff survey (n=20) was conducted to determine the resisting and driving forces. In terms of the driving forces, the teachers of English, education support, social studies and science were asked to list what they saw as the advantages of the ERICA strategy (see Appendix E). The written responses from the various types of subject teachers were collated in Table 7.2.

Table 7.2. Teachers' (n=20) perceptions about driving forces.

Subject	Driving Forces
English	<ul style="list-style-type: none"> Can be used across curricula. Makes students aware/ conscious of the process, i.e., develops their reading. Activities suit student abilities. Teaches students the skills needed to tackle transactional texts. Greater student involvement in learning process.
Social Studies	<ul style="list-style-type: none"> Gives students a structure/ framework for finding information from a book. Makes text reading easier and more enjoyable. Gives students a sense of achievement.

Provides an across-the-curriculum emphasis.

Science Brings greater understanding to science concepts.
 Adds variety to lessons.
 Focuses teachers on important skills.
 Improves literacy skills by repeated reinforcement.
 Could lead to a consistent approach in teaching with both
 primary and secondary teachers.

The author categorized the data in Table 7.2 into three domains: engagement, skill development and knowledge construction – shown in Table 7.3. The engagement category encompasses the notion of student-centered learning where the student becomes the focal point and the teacher is the facilitator in the learning process. The two other domains relate to students learning to developing fundamental literacy skills and learning to construct knowledge from text.

Table 7.3. Categorization of ERICA’s driving forces into domains.

Domains	Traits
Engagement	Makes lessons more structured. Ensures that activities suit student abilities. Ensures greater student involvement in the learning process. Makes text reading easier and more enjoyable. Gives students a sense of achievement. Adds variety to lessons. Can be used across the curricula.
Skill Development	Makes students more aware of the reading process. Teaches students the skills needed to tackle transactional texts. Focuses teachers on important skills. Brings consistency to teaching approaches in both secondary and primary education. Improves literacy skills by repeated reinforcement.
Knowledge Construction	Greater student involvement in the learning process. Brings greater understanding of science concepts.

Table 7.4. Teachers' perceptions of the importance of ERICA.

Domain Questions	Nov 1990 Mean(S.D) n = 19	Nov 1991 Mean(S.D.) n = 21	t-Score
Assists student to develop their understanding of content information	1.47 (0.47)	1.54 (0.57)	0.14
Develops literacy skills, especially those related to reading and writing.	1.42 (0.68)	1.50 (0.73)	0.30
Develops Information processing skills.	0.52 (0.49)	0.50 (0.72)	0.83
Develops thinking and problem solving skills.	0.68 (0.86)	0.63 (1.25)	0.14

* $p < 0.05$

A summary of the analysis of the survey data related to the perceived importance of ERICA to teachers, which is presented in Table 7.4, shows that there was no statistically significant difference in teacher perception between 1990 and 1991. For example, after two years of exposure to ERICA, the teachers still agreed/ strongly agreed (a shift in mean from 1.47 to 1.54) that the strategy helped students to develop an understanding of their subject content.

A summary of the analysis of the survey data related to teachers' perceived satisfaction with the ERICA strategy (see 5.4.2.1/ Teacher Surveys 1990/91), which is presented in Table 7.5, shows that there was no statistically significant difference in teacher satisfaction between 1990 and 1991 at a $p < 0.05$ level, however, at $p < 0.1$, there were statistical differences. After two years of exposure, the teachers agreed/ strongly agreed that the strategy had added variety to lessons (a shift in mean from 0.95 to 1.28) and had improved their capacity to develop information processing skills (a shift in mean from 0.79 to 1.14). In relation to teachers' believing that ERICA made lessons more interesting and enjoyable, there was no statistical difference between 1990 and 1991 at either 0.1 or 0.05. Teachers still agreed that ERICA made lessons more interesting and enjoyable.

Table 7.5. Teachers' perception of the satisfaction gained through the use of ERICA

Domain Questions	Nov 1990 Mean (SD) n = 19	Nov 1991 Mean (SD) N = 21	t-Score
Makes lessons more interesting and enjoyable.	1.10 (0.79)	1.09 (0.74)	0.04
Adds variety to lessons.	0.95 (0.69)	1.28 (0.61)	1.30
Develops Information processing skills.	0.79 (0.68)	1.14 (0.67)	1.36

* $P < 0.1$

Further support that the ERICA strategy was attractive came from the Journal of Events (JE) and the teacher interviews. Several comments in the JE support the

notion that some teachers were keen to adopt ERICA; at a meeting of the ERICA committee, convened to discuss the lack of progress, English and science teachers were supportive of ERICA, but there was large scale resistance in the social studies department (LE36). Science teachers were seen to be keen to use the new strategies in the preparation and thinking through stages, but there was the concern that they did not fully understand the notion of stages (LE39,51).

An examination of the interview transcripts supports the contention that the ERICA framework was seen as having certain qualities that assisted teachers in addressing the literacy problem. The ERICA framework was seen as improving a teacher's teaching (In3Q1; In5Q7); maintaining a student's interest (In3Q2); providing a means to approach the teaching of transactional texts - a nebulous area of the English curriculum (In3Q3); offering structure for the teaching of literacy across-the-curriculum (In4Q2); adding variety to lessons (In4Q5; In5Q7; In6Q5; In15Q3); improving learning (In4Q5); improving students' understanding of concepts (In5Q6; In7Q8); and providing teachers with a framework to structure their teaching (In12Q4).

Those teachers who understood and used ERICA regularly developed a strong commitment to the strategy. The senior teacher of English in 1991 believed that an unusual set of circumstances led to the commitment of his staff (In12Q1). Some of the staff that had been in the school in the previous year had become aware of the framework and developed their understanding because they saw the need to address the literacy problem. The enthusiasm of these teachers had influenced the new teachers, especially the graduates who were keen to succeed in their new employment roles. The ERICA co-ordinator was seen as harnessing this enthusiasm and encouraging its development into commitment. Later in the interview (In12Q4), the senior teacher of English emphasized that the significant changes that occurred in 1991 were dependent on the groundswell that had been building since 1987. Without the foundation that had been built, the work of the Coordinator would not have been so successful.

7.3 Response to Research Question 3 concerning the Assimilation of ERICA Strategies

In determining how classroom teachers responded to the opportunity to implement the ERICA strategies in the classroom, triangulation was achieved using teacher surveys, student surveys and classroom observations. The Journal of Events and the staff interviews provided additional supporting information.

7.3.1 Teacher Surveys

Two types of staff surveys were conducted in relation to teachers' assimilation of the ERICA strategies. The first related to how the ERICA strategy was being used by teachers and aimed to determine if this use had changed over the three year duration of the data collection. In the second type of survey, teachers were asked to indicate the frequency of use of particular strategies. This survey was nearly identical to that given to students and was part of the process used to confirm if the students were seeing the same strategies being used in the classroom as those the teachers claimed they used.

7.3.1.1. Frequency of Use Survey. The ERICA Driving Forces Survey (see Appendix E) was administered in February 1990 and the ERICA Teacher Surveys (See Appendix F) were administered in November 1990 and a slightly modified version in December 1991 and the results are presented in Table 7.6. Teachers were categorized according to their subject department and their response to the questions regarding their use of ERICA strategies. For each year, the number of teachers responding to whether or not they used ERICA was converted to a percentage as a consequence of there being a marginal difference in numbers of teachers completing the survey at each data collection point.

Over the duration of the study, teachers indicated they had started to make greater use of ERICA in the classroom. In February 1990, a large majority of teachers (75%) indicated that they either had not heard of ERICA or never used it. By November 1991, 6% of teachers indicated a lack of knowledge or use of ERICA. Conversely, in

February 1990, 30% of teachers indicated that they used ERICA either infrequently (20%) or regularly (10%). By the end of 1991, 42% of teachers indicated infrequent use of ERICA and 52% indicated regular use.

Table 7.6 Teachers' use of ERICA strategies from 1990-1991

Teacher Use of ERICA	Subject	% Teachers Identifying Category		
		Feb90 n=20	Nov90 n=17	Dec91 n=17
A - Didn't know it existed	Science	15		
	English	5		6
	Social Studies	5		
B - Heard of, but don't use it.	Science	15	6	
	English	15	6	
	Social Studies	15		
C - Use it infrequently	Science		17	13
	English	10	12	23
	Social Studies	10	29	6
D - Use it regularly	Science	10	12	23
	English		12	6
	Social Studies		6	23

There was an unusual trend amongst the English teachers that went against the general trend with an increase in the use of ERICA throughout 1990, but a reversal occurring in 1991. In November 1990 there was a downward shift from 12% to 6% in the frequent use category and a corresponding increase from 12% to 23% in the frequent category. This negative trend can be partly explained by a 80% turnover in English staff between 1990 and 1991. In a corresponding period, there was a small turnover in science staff and no change in the social studies staffing. The English senior teacher explained (In12Q5) that with himself being newly appointed, and with a significant turnover of staff, progress had been inhibited. However, he contended that with the completed training of his staff, and the fact they were now comfortable with the ideas, 1992 would be a consolidation period where good progress would be made with the implementation of ERICA.

7.3.2 ERICA Teacher Survey. This survey (see Appendix G), conducted in December 1990, required teachers to indicate the frequency of use for particular strategies in their classrooms. As previously stated, the response scale was O - occasionally (once or twice every month), F - frequently (once or twice every two weeks) and A - always (once or twice every week). Each subject area was recorded separately. Six English, five science and five social studies teachers responded. For each stage of the ERICA framework, strategies were identified as being used regularly when they received a ranking better than occasionally, with one or more teachers placing their rankings in the frequently or always categories.

Table 7.7. Teacher (n=16) perceptions regarding the use of ERICA in the Preparation stage.

ERICA Strategy	Subject	Teacher Expression of Use			
		N	O	F	A
Concept Map	English	3	2	1	
	Science		4	1	
	Social Studies	1	3		1
Structure Overview	English		4	1	1
	Science	5			
	Social Studies		4	1	
Word Sleuth	English	1	5		
	Science		4	1	
	Social Studies		1	3	1
Crossword	English		4	2	
	Science		2	2	1
	Social Studies		3	2	
Matching Test	English	2	4		
	Science	2	2		1
	Social Studies		2	3	
Word Bingo	English	6			
	Science	1	3	1	
	Social Studies	3	2		
Hang-The-Man	English	5	1		
	Science		2	3	
	Social Studies	1	1		3
Interesting Word Chart	English	4	2		
	Science	3		2	
	Social Studies	2	3		
Graphic outline	English	3	2	1	
	Science	4	1		
	Social Studies		2	2	1

The results of the teacher perceptions in relation to the preparation stage are found in Table 7.7. The crossword was the only strategy used regularly by all subjects. Certain strategies were used regularly in different subjects: English teachers used the structured overview and graphic outline; science teachers used the word sleuth, and the hang-the-man; and social studies teachers regularly used the structured overview, word sleuth, hang-the-man and graphic outline.

The results of the teacher perceptions in relation to the thinking through stage are presented in Table 7.8.

Table 7.8. Teacher (n=16) perceptions of the use of ERICA in the Thinking Through stage.

ERICA Strategy	Subject	Teachers' Expression of Use			
		N	O	F	A
Three Level Guides	English	2	4		
	Science	4	1		
	Social Studies	2	2	1	
Word Cloze	English		4	2	
	Science			4	1
	Social Studies		2	2	1
Answer Questions from a text	English	1	3	2	
	Science			3	2
	Social Studies		1	3	1
Questions related to a diagram, map or some other pictorial representation.	English	1	2	3	
	Science	3	1	1	
	Social Studies		1	4	
Main point paragraph	English	2	2	2	
	Science		4	1	
	Social Studies		2	3	
Jumbled paragraph	English	5		1	
	Science	3	2		
	Social Studies	1	3	1	
Worksheet	English		2	4	
	Science		3	1	1
	Social Studies			4	1
Contextual Clues Sheet	English	4	2		
	Science	1	2	1	1
	Social Studies	1	3	1	

A number of strategies were used regularly by all teachers: the word cloze; answering questions from a text or those related to a diagram, map or some other

pictorial representation, worksheets, and the main point paragraph. The use of other strategies varied; Social studies and science teachers used the contextual clues strategy, but social studies teachers used the jumbled paragraph strategy and no teachers regularly used the three level guide strategy.

Table 7.9. Teacher (n=16) perceptions of the use of ERICA in the Extracting and Organizing stage.

ERICA Strategy	Subject	Teachers' Expression of Use			
		N	O	F	A
Construction of a diagram	English	4		2	
	Science	1	3	1	
	Social Studies		2	3	
Note taking	English		3	3	
	Science	2	2	1	
	Social Studies			4	1
Summarizing a section of text.	English	1	4	1	
	Science	1	2	2	
	Social Studies		2	2	
Construction of a table	English	2	4		1
	Science		1	2	2
	Social Studies		2	2	1
Library research notes	English		4	2	
	Science			5	
	Social Studies	1	3	1	
Compare and contrast	English	1	5		
	Science	1	3		
	Social Studies	1	2	1	
Cause and effect	English	2	4		
	Science	1	3	1	
	Social Studies		3	2	
Supporting details for a major idea.	English	2	3		1
	Science	2	1	2	
	Social Studies		3	2	
Construction of charts/timelines.	English		4	2	
	Science	2	2	1	
	Social Studies		3	2	
Construction of a concept map.	English	3	1	1	1
	Science	2	2	1	
	Social Studies	1	3	1	
Pyramiding	English	6			
	Science	3	2		
	Social Studies	1	3	1	
Outlining	English	5	1		
	Science	3	2		
	Social Studies	1	3	1	

The results of the teacher perceptions in relation to the Extracting and Organizing stage are found in Table 7.9. Summarization of text and preparation of library research notes were used regularly by all three subjects with the use of other strategies varying. Social studies and science teachers used several strategies regularly - the construction of a diagram and a table; compare and contrast; the supporting of a major idea. English and social studies teachers regularly used note taking and the construction of charts and timelines. Only social studies teachers regularly used the construction of the concept map, pyramiding and outlining.

Table 7.10. Teacher (n=16) perceptions of the use of ERICA in the Translation stage.

ERICA Strategy	Subject	Teacher Expression of Use			
		N	O	F	A
Research assignment	English	1	1	4	
	Science	1	2	2	
	Social Studies		4	1	
Experimental write-up	English	1	2	3	
	Science	3		2	
	Social Studies	2	3		
Letter eg to the editor	English		3	3	
	Science	5			
	Social Studies	1	4		
Play	English		2	4	
	Science	4	1		
	Social Studies	4	1		
Fictional story	English		1	5	
	Science	5			
	Social Studies		3	2	
Picture sequencing	English	1	3	2	
	Science	2	2	1	
	Social Studies	3	2		
Essay supporting an opinion	English		1	4	1
	Science	5			
	Social Studies	1	2	2	
Book review	English		2	4	
	Science	5			
	Social Studies	4	1		
Interview with a person	English	1	2	3	
	Science	5			
	Social Studies	2	3		

The results of the teacher perceptions in relation to the Translation stage are found in

Table 7.10. No strategy was used regularly by all subject areas though English teachers used all translation strategies regularly. The science teachers only used the research assignment regularly with an unexpected lack of use of experimental write-up genre, perhaps because there was a requirement that the write-up was without teacher assistance. Most science teachers direct the write-up by expecting students to copy the teacher's write-up off the blackboard. Social Studies teachers favoured the fictional story and the essay supporting and opinion genre.

7.3.3 Student Surveys

The survey on student recognition of ERICA strategies (Appendix H) was administered at the end of each of the years 1989, 1990 and 1991 to indicate how often they had been exposed to a particular ERICA strategy. Each year of data was viewed as a sample being drawn from the same population. An analysis of variance (Minium, 1970; Popham & Sirotnik, 1973; Wonnacott & Wonnacott, 1972) was conducted to see if there was any statistical difference between years. Each strategy was seen as a different variable; hence, 39 analysis of variance were conducted: nine in the preparation stage; nine in the thinking through stage; twelve in the organization stage and nine in the translation stage. For each strategy, a F score greater than 4.7 (n=200) meant that there was a statistically significant difference at $p < 0.01$ between the three years. In other words, the strategy was being seen in the classroom at a greater or lesser frequency by comparing the mean scores to determine whether greater or lesser use had occurred. The data are summarized in Table 7.11.

A number of strategies used by classroom teachers, having a consistent average around 2 (seen occasionally), showed no statistical differences in their use during the years. They were, perhaps, the strategies that were used, and are still being used, by the classroom teachers irrespective of whether ERICA had been implemented. The stages and strategies where no statistical difference occurred over the three years were:

1. Preparation: Word sleuth, crossword and matching test.

2. Thinking through: Word cloze, answering questions from a text, main-point paragraph and worksheet.
3. Extracting and Organizing. Summarize text, library research, construct timelines and charts and outlining.
4. Translation. Experimental write-up, play, fictional story and an essay supporting an opinion.

Stages and strategies introduced in the ERICA training seminars that showed statistically greater use in the classroom over three years were:

1. Preparation. Prepared concept map, structured overview, hang-the-man, interesting word chart and the graphic outline.
2. Thinking Through. Questions related to a diagram, contextual clues and a think sheet.
3. Organizing. Construction of a diagram, note taking, construction of a table, support of major idea, construction of a concept map and pyramiding.
4. Translation. Research assignment, picture sequencing and book review.

Stages and strategies introduced to the teachers at the training seminars not seen by students in the classroom (ie mean less than 2) were:

1. Preparation: Word Bingo.
2. Thinking Through: Three level guide and jumble paragraph.
3. Organizing: Compare/ contrast and cause/effect.
4. Translation: Letter and an interview with a person.

The final chapter examines the match between the teacher and student perceptions in terms of the assimilation of ERICA strategies into classroom practice.

Table 7.11. Students' Recognition of ERICA strategies

Strategy	Year			F Value * p < 0.05
	1989(n=93)	1990(n=85)	1991(n=115)	
	X (SD)	X (SD)	X (SD)	
1. Preparation				
Prepared Concept Map	1.75(0.56)	1.88(0.68)	2.04(0.75)	4.81 *
Structure Overview	1.68(0.58)	2.12(0.71)	2.54(0.94)	31.07 *
Word Sleuth	2.23(0.66)	2.53(0.692)	2.63(0.84)	4.01
Crossword	2.21(0.64)	2.48(0.72)	2.35(0.85)	2.34
Matching Test	1.90(0.68)	1.88(0.66)	1.93(0.82)	0.067
Word Bingo	1.34(0.65)	1.57(0.70)	1.44(0.61)	2.29
Hang-the-man	1.35(0.52)	1.80(0.81)	1.78(0.83)	11.06 *
Interesting Word Chart	1.45(0.66)	1.80(0.81)	1.80(0.85)	6.52 *
Graphic Outline	1.29(0.45)	1.68(0.85)	1.93(0.87)	18.23 *
2. Thinking Through				
Three Level Guide	1.57(0.66)	1.71(0.83)	1.61(0.85)	0.96
Word Close	2.03(0.66)	2.11(0.69)	2.08(0.75)	0.42
Answer Questions Text	3.05(0.77)	2.87(0.75)	3.12(0.84)	2.55
Questions/ Diagrams	2.17(0.71)	2.08(0.78)	2.46(0.84)	7.49 *
Main Point Paragraph	2.34(0.80)	2.31(0.86)	2.26(0.80)	0.26
Jumbled Paragraph	1.48(0.62)	1.48(0.56)	1.52(0.76)	0.16
Worksheets	2.34(0.87)	2.52(0.85)	2.50(0.82)	1.16
Contextual Clues	1.58(0.71)	1.63(0.78)	2.00(0.80)	9.86 *
Think Sheet	1.43(0.72)	1.82(0.72)	1.43(0.63)	10.33 *
3. Organizing				
Construction Diagram	1.60(0.67)	2.20(0.77)	2.27(0.78)	23.18 *
Note Taking	2.65(0.79)	2.42(0.87)	2.90(0.89)	6.91 *
Summarizing Text	2.48(0.78)	2.78(0.76)	2.64(0.80)	3.56
Construction of Table	2.34(0.87)	2.34(0.86)	2.70(0.72)	6.90 *
Library Research	2.25(0.65)	2.29(0.64)	2.36(0.70)	0.55
Compare Contrast	1.65(0.65)	1.72(0.79)	1.67(0.71)	0.16
Cause Effect	1.80(0.77)	2.02(0.82)	1.76(0.68)	2.92
Support Major Ideas	1.84(0.85)	1.71(0.62)	2.11(0.72)	9.28 *
Construct Charts/ Time	2.08(0.66)	1.99(0.63)	2.16(0.81)	1.75
Construct Concept Map	1.32(0.55)	1.61(0.63)	1.83(0.81)	14.34 *
Pyramiding	1.48(0.60)	1.71(0.69)	1.80(0.77)	5.28 *
Outlining	2.05(0.82)	2.04(0.75)	2.10(0.75)	0.22
4. Translation				
Research Assignment	2.44(0.75)	2.39(0.69)	2.82(0.86)	8.40 *
Experimental Write-up	2.00(0.70)	2.09(0.75)	2.30(0.87)	4.44
Letter	1.66(0.65)	1.76(0.69)	1.87(0.69)	2.33
Play	1.86(0.68)	2.04(0.68)	1.95(0.67)	1.67
Fictional Story	2.07(0.69)	2.10(0.65)	2.15(0.71)	0.39
Picture Sequencing	1.34(0.53)	1.80(0.56)	1.83(0.70)	17.89 *
Essay Support Opinion	2.11(0.80)	2.10(0.76)	2.18(0.88)	0.41
Book Review	2.23(0.69)	1.93(0.63)	1.93(0.67)	6.13 *
Interview of Person	1.53(0.63)	1.73(0.70)	1.82(0.73)	4.72

7.3.4 Classroom Observations

The observation of classroom practice is the last set of data related to the evaluation of the implementation of the ERICA strategy. Two sources of data arose out of these observations – a comparison of one science and one English teacher, who participated in the ERICA induction program, with one social studies teacher who did not, and documentation of the types of ERICA strategies used by the different subject teachers. The author made the classroom observations using the process described in the methodology (see 5.4.2.2/ 3). Each teacher was observed for approximately eight 40 minute periods over the same school term, time being spent in each of the ERICA stages calculated as a percentage of total observation time as shown in Table 7.12.

Table 7.12. Percentage of time observing classrooms in science, social studies and English for the ERICA stages.

ERICA Stages	% Time in Stages		
	Science (Total time = 305min)	English (Total time = 335min)	Social Studies (Total time = 325min)
1. Discussion	39	43	51
2. Preparation	3	10.5	17
3. Thinking Through	15	10.5	3
4. Extracting & Organizing	26	27	8
5. Translation	4	9	12
6. Other	13	0	9

7.3.4.1 Comparison of classes. Observations were made of classrooms in the subject areas of English, science and social studies. The English and science teachers had participated in the ERICA induction program, but the social studies teacher had not, though he still believed that his teaching conformed to ERICA.

English vs Social Studies Classroom. There were some significant differences in patterns observed in the English classroom and the social studies classroom. Less time was devoted to teacher discussion in the English classroom (43% to 51%). The social studies teacher devoted more time to preparation activities (17% to 10.5%), but the English teacher devoted more time to the thinking through (10.5% to 3%) and the

organizing stages (27% to 8%). Both the English and social studies teachers devoted a similar amount of time to translation activities (9% to 12%).

Science vs Social Studies Classroom. The pattern between the science and social studies classroom was similar to that between English and Social Studies. There was less time devoted to teacher discussion in the science classroom (approx. 40% to 50%), but the science teacher devoted less time to preparation activities than the social studies teacher (approx. 5% to 20%). In terms of the thinking through (approx. 15% to 5%) and the extraction and organization of information (approx. 30% to 10%), the science teacher devoted more time than the social studies teacher. The social studies teacher devoted just over 10 % of class time to translation activities; whereas; the science teacher allocated less than 5 % of class time to such activities.

7.3.4.2 Types of Activities. In estimating the percentage time spent in an ERICA stage, the classroom observation sheets provided data related to the types of activities used by the different teachers. These data are recorded in various tables that correspond to the ERICA stages.

Preparation. Both the English and science teachers were using new strategies within the ERICA framework from the ERICA Induction program (LE 29-31). The science teacher was making use of concept maps and the English teacher used of the graphic outline. Data in Table 7.12 leaves the initial impression that the social studies teacher was spending most time preparing the class for a language experience (11%), but he was requiring students to read a textbook (11%) in a way that was unconnected to an application of ERICA. What was observed was a traditional dependence on the use of a textbook (see In8Q2-5).

Thinking Through. How little time (3%) the social studies teacher devoted to this stage in comparison to the English (10.5%) and the science teacher (15%) is highlighted in Table 7.12. The social studies teacher used worksheet outside of any ERICA framework. The science teacher used questions related to a diagram or another pictorial representation (10%), answers from a textbook (2%) and worksheets requiring specific questions answered (3%). His move away from the traditional use

of a textbook supports the notion that there was a real attempt to implement the ERICA framework. In regards to the English teacher, there was an entire dependence on using questions related to a diagram or another pictorial representation. Again, there was a genuine attempt to implement the ERICA framework.

Extracting and Organizing. Table 7.12 shows that the English (27%) and the science teacher (26%) were assisting their students to extract and organize information; whereas, the social studies teacher placed little emphasis on this stage and basically required the students to take notes or summarize a section of text. An examination of the raw data in the observation schedules shows that both the English and social studies teachers were using a variety of strategies. The English teacher used student-centered notes (3%), the summarization of text (1.5%), student-centered library research notes (9%), teacher-directed library research notes (12%) and the exploration of text (1.5%). The science teacher used the construction of a diagram (3%), student centered note taking (10%), teacher-directed note taking (3%), answering questions from a text (5%) and compare and contrast (5%).

Translation. Table 7.12 highlights how little time all subjects devoted to the translation stage, especially with reference to developing an extended piece of writing. All teachers required their students to write short answers or paragraphs. Surprisingly, the English teacher was the only one to require an experimental or activity write-up where the students were expected to implement a genre (3% of the 9%).

7.4 Response to Research Question 4 concerning Student Writing Competence

The fourth research question relates to the impact that the implementation of the ERICA innovation, through the teacher, had on student writing competence. Student essays were collected in a controlled manner as required by Mosenthal's Model of Writing Competence and rated in a holistic manner (see 5.4.3). A correlation coefficient was calculated for each pair of raters used in the study to assess the essays with reference to the 6-point rating scale. Correlation scores ranged from 0.67 (n=52) to 0.84 (n=50) for the essay rating for each pair of raters.

Once the essays scores had been generated, an ANCOVA, with the Test of Logical Thinking (LT) as the covariate, was conducted on the data to determine the effect of the ERICA implementation (year) on essay writing competence (see Table 7.13). The data indicated a statistically significant difference ($p < 0.001$) between years on the achievement of essay writing competence when the students' capacity to think or reason taken was factored out. An examination of the means and the standard deviations for each year presented in Table 7.14. show a slight improvement in the mean from Year 1 to Year 2, but a decline from Year 2 to Year 3.

Table 7.13. Analysis of Covariance: Essay by Year with LT as the Covariate (n = 732)

Source of Variation	Sum of Squares	DF	Mean Square	F Value
Covariates	15.85	1	15.85	26.37*
LT	15.85	1	15.85	26.37*
Main Effects	32.68	2	16.34	27.18*
Year	32.68	2	16.34	27.18*
Explained	48.53	3	16.18	26.91*
Residual	437.65	728	0.60	
Total	486.18	731	0.66	

* $p < 0.001$

Table 7.14. Means and Standard Deviations for essay writing competence performance by Year

Year	Mean	Std. Dev	Case
1	2.87	0.81	227
2	3.13	0.74	250
3	2.60	0.76	255

In a further analysis of the original data, a difference between two dependent means (see 5.5.3) was conducted on 56 six paired scores (students assigned essays scores from two sequential years). The results show a means of 2.95 and 3.15 over two years ($z = 0.26$; $p > 0.05$) asserting that there is no statistical difference in the mean essay scores between years. A discussion of possible explanations for this outcome is found in Chapter 8.

7.5 Summary

Chapter 7 has presented the data outcomes from the investigation that has attempted to answer three questions. Research Question 2 was concerned with the resisting and driving forces that impacted on the implementation of the ERICA strategy. With Research Question 3, the extent of implementation of the ERICA framework in the classroom was determined. Research Question 4 examined the impact of the teacher on the achievement of student outcomes, namely an improvement in writing competence.

The final chapter of this study draws together the data from all research questions and seeks to draw conclusions from two main domains. Firstly, conclusions are drawn about the value of a change-framework for educators intending to implement an innovation in their school. Secondly, conclusions and recommendations about the implementation of a literacy innovation, such as ERICA, within schools are drawn.

CHAPTER 8

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

Much research has shown that innovations are difficult to implement in schools. This study focused on the implementation of a literacy innovation into a senior high school in a major regional centre in Western Australia in a socially disadvantaged setting. The school experienced great difficulties with the process of adopting and implementing an across-the-curriculum literacy innovation called ERICA, using Commonwealth Priority Schools funds. What has been learnt confirms the general principles behind an educational change management framework that was developed by expanding Fullan's (1982) original work with reference to further work done in the fields of change management and effective schools research. If addressing the literacy problem in schools is going to be more successful, then this study has shown the need to apply educational change management principles to the implementation of innovations in educational settings, especially those that relate to settings of social disadvantage.

This chapter examines each of the four research questions that guided the study, describes the findings of the research process, outlines limitations and proposes possibilities for further research. A set of concluding comments draws the study to a close.

8.2 Decision-making Process

Research Question 1 focused on the decision-making process, seeking to describe the significant events or factors that led to the adoption and implementation of the ERICA strategy in reference to an educational change management framework. Chapter 6 presented the detailed description of these events or factors and the change framework described in Chapter 3 was the tool used to develop these descriptions, focusing on the characteristics of the innovation or change (see 6.2), the characteristics of the school (see 6.3) and the characteristics of the system (see 6.4). A fourth factor in the framework, the external environment, was deemed as having little direct relevance to this study.

In reference to the characteristics of the innovation, this study showed that the implementation of the ERICA strategies was accepted because of a genuine literacy need in the school that could be addressed with this framework. New teaching strategies proved motivating for the teachers, but the complexity of the ERICA framework meant that as the understanding of the teachers increased, the way that those strategies were used changed and greater alignment with the philosophy behind the framework was achieved with time. ERICA proved to be a quality strategy that met the day-to-day practical needs of teachers.

In reference to the characteristics of the school, this study showed that it is difficult to implement an innovation during a time of curriculum change. The impost of the Unit Curriculum on all staff made it difficult for teachers to consider an across-the-curriculum literacy initiative when they were expending so much energy implementing a governmental initiative. The principal was so concerned about the teacher workloads that she initially resisted the notion of adopting ERICA, but allowed the implementation to proceed when she became aware of the support of senior teachers. The principal was the driving force behind the Commonwealth-funded PSP project for the implementation of ERICA. Such funds are provided to schools in disadvantaged social settings so that social equity issues can be addressed. Teachers had a considerable say in the decision-making process through their contribution to the school plan, needs assessment and the development of the PSP submission that provided the funds for the implementation of ERICA. Part of those funds went toward the appointment of a coordinator who proved to be an excellent change agent, successfully driving the professional development of teachers. Through the experimentation with ERICA, the teachers discovered many intrinsic rewards offered by the strategy.

In reference to the characteristics of the system, this study showed that there was a negative psychological history with respect to the implementation of a system-driven innovation. This issue was clearly seen when a District Officer attempted to introduce ERICA into the high school and failed, but when the senior teachers approached the District Office to develop training programs for ERICA, the implementation of the

strategy proceeded. Indeed, the initial inservice organized by the District Office in relation to ERICA led to the senior teachers' interest in the strategy. Support from the District Superintendent led to PSP funds being directed to the high school as well as the establishment of a District Literacy Committee.

In response to Research Question 1, this study confirms that the adoption and implementation of an educational innovation is impacted by a complex interaction of events/ factors. Planning can be done to set the direction of a change, but the outcome of the interacting factors is not entirely predictable. This study has confirmed the contention made in section 2.3.4, namely, that planning is extremely important, but an educational administrator should not expect that plan to be implemented without changes and support, and without encountering problems that in turn need to be addressed. In this study, the turnover of staff was a major impediment to effective planning. The interviews in Appendix C highlight this point where in the three years duration of the study, three different people occupied the position of principal, two people the position of Deputy principal and two people the positions of senior teachers of science and English. Furthermore, the ERICA Coordinator, who had done an outstanding job, was transferred to a position where she was helping all schools in the state to implement the Stepping-Out program, a literacy innovation developed mainly from the work of ERICA.

8.2.1 Limitations

A limitation of this study in reference to the educational change framework relates to the very nature of the study. The implementation of a literacy innovation was viewed in reference to an educational change framework, but personnel, who had little knowledge of that framework, drove the adoption and implementation processes. So the factors previously identified as impacting on the adoption and implementation of any innovation did impact on the implementation of the ERICA strategy. However, no direct assessment was conducted on the planned processes that can be used to govern an educational change. The focus of the change was the ERICA strategy and not the change processes used to ensure that it was effectively implemented.

To conduct an effective change, the study identified that it is best to not only agree to implement an innovation, but agree to implement an appropriate planning process. Those charged with the responsibility of deciding on adopting and then implementing the innovation would need to engage in a planning cycle and be familiar with those factors that may impinge on their planning process. The focus would be on inducting the participant administrators into one of the cyclic models of educational change (see 2.3.2) and making them aware of the principles behind an educational change (see 2.3.4). In this context, the educational change framework becomes an important tool in the professional development of staff, making them aware of the factors they need to consider when adopting and implementing an innovation.

The plan is the first stage that would be followed by the implementation process. Whilst the implementation was being conducted, a detailed recording of the events that unfold would occur. A measure could then be gained on the discrepancy between the planned change and the actual outcomes of the implementation. This study only provided a rich description of the process of adopting and implementing the ERICA strategy in reference to a change framework. No detailed comparison could be made between the intended and the actual outcomes.

8.2.2 Recommendations

This study has provided a useful contribution to the development of a change framework, a tool that will be valuable as a guide to administrators, or other educators, contemplating the implementation of an innovation. Further studies, as the one broadly suggested, can add to the refinement of this framework, especially those that focus on settings of social disadvantage. It is here that factors that impede effective implementation of an innovation are heightened making the implementation of an innovation difficult. Hence, a recommendation is made that educators continue to develop this framework, or similar ones, that focus on the principles of educational change management for all educational settings, that would be useful in the following contexts:

- Induction programs for newly appointed educational administrators.
- Professional development courses for current administrators in schools.

- As a component of the guidelines given to personnel seeking to apply for commonwealth or state government funds to implement innovations in schools.

8.3 Resisting/ Driving Forces

Research Question 2 sought to determine the significant resisting and driving forces that impacted on the adoption and implementation of the ERICA strategy. The resisting forces were described in order of significance and included a lack of resources (7.2.1.1), future shock (7.2.1.2), misunderstanding (7.2.1.3) and a lack of reward (7.2.1.4). In reference to resources, teachers perceived there was too little time for ERICA because of the implementation of the Unit Curriculum. If the teachers were to implement ERICA, time was needed to produce relevant resources that did not exist. The lack of time was also a byproduct of future shock where the teachers were reluctant to become engaged in anything new because too much change was happening around them. Symptoms of this future shock were seen in the frequent staff transfers, industrial action, and the lack of a change agent to drive the implementation of ERICA. Both a lack of resources and future shock could be seen as contributing to the misunderstanding that existed in relation to the implementation of ERICA. Teachers did not easily grasp the full implication of ERICA and were initially attracted to new literacy strategies, but did not properly understand how the strategies related to the overall change framework.

This study showed that considerable effort was required to induct teachers in the full understanding of ERICA and the coordinator proved to be invaluable in providing the needed professional development. The frequent turnover of staff only exacerbated this situation with new staff requiring a high level of input when that energy could have been directed toward further development of those who already had a rudimentary understanding of ERICA. To effectively implement any innovation in socially disadvantaged setting, the issue of staff turnover will need to be addressed. Unless teachers are given substantial incentives to remain in such schools for longer than the 2 year mandatory period before a transfer can be gained, then the successful implementation of an innovation is doubtful.

The recognition that teachers' workloads were too demanding and that they were not being appropriately compensated for their efforts affected the implementation of ERICA. Most teachers involved in the implementation believed that recognition of their efforts was just as important as monetary reward. There was some debate as to whether financial rewards were enough of an incentive to encourage teachers to write units. Many of the teachers were prepared to write materials for the inherent value of ERICA, but others saw that financial incentives motivated them to develop resources to a level whereby other teachers could use them.

The two main driving forces were a perceived need to address the literacy problem and the capacity of the ERICA strategy to meet student and teacher needs. Sections 6.2.1 and 7.2.2 document the need to address a literacy problem. The needs assessment was conducted in the school that showed that teachers perceived that students had literacy problems and when the ERICA submission was voted on, staff rated it as the number one priority for the PSP program. Sections 6.2.2-6.2.4 and 7.2.2 document the attributes of ERICA that the teachers saw as being able to meet the perceived need.

8.3.1 Limitations

Although in responding to Research Question 2, efforts were made to document the resisting and driving forces, this was not done in the context of an overall agreed planning cycle and the data were not used directly to plan the next phase of the implementation. This does not imply that the information did not influence planning because the nature of the resisting forces was so obvious that all of the educational administrators had some idea of the vexing issues facing the staff. The school was conducting its own planning process through the senior staff meetings, the PSP submission process and the development of a school plan and would have taken into account the issues. This study focused on describing a change and seeing how it conformed to notions of educational change. However, another study focused on the change management of the implementation could have linked the identification of the resisting and driving forces with ongoing planning with a cyclic model or field

analysis, but senior school administrators would have had to be involved and driving the change.

8.3.2 Recommendations

A recommendation can be made that a study tracks the adoption and implementation of an innovation through the eyes of a senior administrator within a framework that reflects a strong understanding of educational change management.

8.4 Assimilation of ERICA

Research Question 3 sought to determine the extent to which the teachers assimilated ERICA into their teaching practice. The data show that over the duration of the study, teachers made greater use of the ERICA strategies (see 7.3), a trend also supported by student survey data (7.3.3). Furthermore, the teacher survey data (7.3.2) showed that a number of strategies introduced at the ERICA training seminars had greater use in the classroom over time, supporting the contention that this aspect of the professional development had been effective. In addition, certain subject areas preferred different strategies with the science teachers making greater use of the concept map as a preparation strategy than the English teachers who used the structure overview. As a further example, the social studies teachers used the graphic outline, but the majority of science and English teachers never used it.

Although there was an uptake of new strategies by teachers, this does not imply that teachers had a full understanding of ERICA or that they were utilizing the strategies within the appropriate framework. Support for this contention came from the JE and the teacher interviews (see 7.2.1.3) and further support was drawn from teacher classroom observations (see 7.3.4). The initial excitement for ERICA by the staff was more a reflection of the usefulness of the new learning strategies in maintaining student interest in the classroom, than an understanding of how ERICA improved student literacy. This misunderstanding was discussed in 7.2.1.3 and is further supported by the findings of the classroom observations, where the classroom time of a science and an English teacher implementing ERICA was compared with that of a

social studies teacher who was not. The observed difference in time spent in each of the ERICA stages (see 7.3.4) suggests that the social studies teacher was using particular literacy strategies, but was not developing an overall understanding of the text within an ERICA framework.

8.4.1 Limitations

In answering Research Question 3, this study sought to determine the extent to which the teachers understood ERICA and were using it in teaching sequences. Greater exploration of this issue is needed than is addressed in this study. Although teachers indicated the extent to which they were using ERICA, their response was subjective without external validation. A detailed review of teacher programs and teaching materials would have had to be conducted and the findings triangulated against additional classroom observations and student perceptions. Such detailed work across more than 50 teachers would have required resources beyond the scope of this doctoral study.

8.4.2 Recommendation

If an appropriate performance management system had been in place for teachers, a measure could have been made of the extent to which teachers were implementing the school's developmental priorities, one of which was ERICA. In this context, the senior teachers could have been trained to determine the extent to which ERICA was being implemented. Hence, a recommendation can be made that for the effective implementation of an innovation, a school needs to have an appropriate performance management system already in place.

8.5 Writing Competence

Research Question 4 sought to determine if there had been any significant improvement in student writing competence over the duration of the study. The analysis of the data (7.4) showed that there were statistically significant differences in student writing competence between the three years in which data was collected. In

real terms, however, the fact that the mean increased from 2.87 to 3.13 in one year, but declined to 2.60 in the following year would suggest little overall improvement in writing competence. In practice, the 0.26 increase in the first year amounts to a 4.3 % improvement on a 5 point scale which in practice is negligible. Furthermore, although the decline after the initial improvement could possibly be explained by the fact that there was an 80% turnover in English staff in 1991, the drop in overall writing competence equates to 8.8 % (a 0.53 decline on a 6 point scale) in the second year. However, this drop only returns the status quo to 0.27 lower than the original mean or a 4.5 % decline on a 5 point scale. The claim for no improvement in overall writing competence is supported by the second analysis which showed no statistical improvement in the writing competence of 56 students over the duration of the study.

The fact that there was negligible improvement in writing competence does not suggest that ERICA is an ineffective literacy strategy. ERICA (see 4.5.2) is fundamentally an integrated reading and writing framework (see 4.3.1 and 4.3.2) that had its origin in reading for meaning frameworks with the addition of a translation phase. In the translation phase, the student has the opportunity to reflect through writing on what has been learned from the text. So although students engage in writing whilst moving through the ERICA stages, there is no guarantee that they will receive instruction to improve their writing competence or to learn a particular genre. As is pointed out by Shanahan (1997), a cognitive separation exists between reading and writing, so it does not mean that instruction in one area will lead to automatic learning in the other (see 4.3.2). In fact, he argues that effective integration of reading and writing requires the teaching of writing within a social context (a similar notion to genre – see 4.5) and does not displace the need for direct explanation or drill and practice. Significant gains in writing competence occur only if students are required to edit their work (see 4.5.2.4). In other words, the students learn through the feedback about their writing (see 4.3.3) and through being required to respond appropriately to that feedback by editing their work.

8.5.1 Limitations

In answering Research Question 4, no data were collected in regard to the extent to which teachers gave instructions concerning general writing, specific genre or editing. The analysis of writing competence centered on a student's capacity to write an essay. If students are competent in this genre, then they will be aware of the need for structure (introduction, paragraphs and conclusion), coherence of thought as demonstrated by the linkage of ideas in paragraphs and the need for grammatical correctness. Section 8.4 suggests that teachers in this study rarely followed through all the stages of the ERICA framework in a sequence when incorporating teaching strategies. Hence, the likelihood that much time was spent teaching an essay writing genre and requiring students to correct their mistakes in their writing would be low, and therefore, the likelihood that student writing competence would have improved over the duration of the study would also be low.

A second realistic possibility exists for the lack of significant improvement in writing competence, namely, that once students reach their teenage years they are nearing their natural potential so normal classroom activities may see little improvement in literacy outcomes. Furthermore, intensive literacy instruction and practice may produce only marginal improvements in student writing competence. The benchmarking study (Cook et al., 1997) show that on a 6 point assessment framework 91 % of students reach level 4, but only 24 % of students reach level 6 (see 4.4). The benchmarking process was in its preliminary development at the time much work was needed to determine what happens to writing standards over time and whether student scores plateau in the teenage years. However, the author contends, that, in light of a normal population, it be would reasonable to suggest that there would be a percentage of students (approximately 25%) in their early teens that would be making their transition to level 6 and their scores may show some variance between Years 8 and 10. There would be many students (approximately 50%) plateauing at level 4 or 5 and their scores would not be expected to change unless there was some specific targeting with direct instruction and practice. Yet another set of students (approximately 25%) would be experiencing difficulty and, even with targeted

literacy instruction, there may not be much improvement in their relative performance.

A comparison between the school's and EDWA's benchmarking standards is not possible, but a speculative contention could be made that the school's achievement would be below state norms. This contention could be supported by the fact that there was a perceived literacy problem in the school and that the school was in a socially disadvantaged setting, attracting Commonwealth PSP funding. Hence, it could be argued that without direct instruction and practice in the particular assessment genre, student writing competence would show a plateauing effect with a similar pattern of scores being seen each year. As previously argued, the way ERICA was implemented did not see students receiving direct instruction or regular practice in an essay writing genre which formed the basis of the assessment framework.

8.5.2 Recommendations

Further research would be required to determine if direct instruction and repeated practice at a particular genre would see an improvement in the writing competence of Year 8-10 students relative to a normal population. The author (Havel, 1995) has previously suggested that the assignment is an excellent vehicle for the development of student writing competence. An assignment based on the writing process maps closely to the ERICA stages. Writing progresses through the stages of prewriting, collection of information, drafting and editing and presentation to an audience. The match with the ERICA framework is close with the preparation and organizing stages matching the collection of information stage. The drafting and editing phase could be subsumed in the translation phase. The main difference between the two frameworks relates to the type of resources. ERICA is built around helping the student understand a chapter/ section of a particular text; whereas, the assignment approach involves collecting information on a particular topic from multiple resources. ERICA is more focused on reading for understanding, but the assignment approach related to the collection of information and presentation of that information in an essay/ report type genre. The author suggests that an amalgamation of the two frameworks can occur in relation to the assignment.

Students well versed in ERICA strategies used regularly by the majority of teachers in a normal classroom situation can apply the strategies to the collection and organization of information from a specific resource (e.g., a book) in an assignment context. Hence, the ERICA strategies played a major role in assisting student to organize information in an acceptable format. In the assignment approach, the teacher can provide instruction in the essay/ report genre. Furthermore, in a staged assessment of an assignment, once students have organized their information they can have their work assessed in relation to the skills required to complete the task. Students use their notes to draft reports/ essays under supervised conditions, where a teacher marks the report/ essay, offering editorial advice to the students who are then required to respond to the guidance before they receive any grade.

By definition, ERICA relates to the content areas of the curriculum such as science, society and environment and mathematics, but it can be used extensively in English if the text is seen as containing literature content. By requiring all content areas to conform to a common assignment approach that reflects both the ERICA strategies and the writing process would provide students with ongoing instruction in the writing process and repeated opportunities to develop their skills, especially if the editing phase was treated seriously. What remains is to test this idea in a school situation where a comparison is made with other students undergoing normal or traditional education.

8.6 Concluding Comments

This study had a dual focus. Firstly, the study assessed whether the implementation of an across-the-curriculum literacy strategy conformed to the collective wisdom of an educational change framework and determined the extent to which such frameworks are useful in guiding the implementation of an innovation. Secondly, the study determined the degree to which the innovation was successfully implemented and suggested possible ways student writing competence may be improved in schools.

There was a close match between the factors described in the change framework to those that impacted on the implementation of the ERICA innovation. The framework

proved to be a useful tool in reviewing a change in a particular school. Although the school was in a socially disadvantaged situation, the main resisting forces related to educational changes being imposed by the government educational system at the time, however, the high turnover in staff heightened those resisting forces that impeded the implementation of ERICA. Greater effort and resources needed to be directed to the professional development of staff. This situation is unlikely to change unless the government is prepared to provide incentives for teachers to remain in socially disadvantaged settings.

The educational change framework of Fullan (1982) was further developed for this study and its ongoing development in light of future educational experience could see it becoming a valuable resource for any educational administrator contemplating the implementation of an innovation. Such administrators could proceed to enact a normal change cycle and rely on the framework to provide the necessary wisdom to reduce the identified resisting forces and to strengthen the existing driving forces. Proceeding in such a manner, recognizes the value of planning, but acknowledges that the outcomes of such planning are not always predictable because of the complexities involved.

The application of educational change management frameworks to the implementation of literacy innovations is needed and something that, to the author's knowledge, has not been attempted before. Studying the implementation of ERICA has shown that it is possible to effectively engage teachers in the change process, but the outcomes of such an implementation will be mixed. Teachers were excited about the array of new strategies that were commensurate with ERICA, and particular subject areas adopted certain strategies that the students acknowledge were in use. There is, however, some doubt as to degree to which these strategies were used within the context of an ERICA framework designed to assist student in effectively engaging with a text. That there was no real overall improvement in student writing competence may not reflect the failure of ERICA, but rather, that the students were not exposed to systematic instruction and repeated practice in an essay/ report genre. A proposal how this issue can be addressed has been made in the previous section.

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APPENDIX A

THE PSP PRIORITIES FOR 1990

APPENDIX B

EXAMPLES FROM THE JOURNAL OF EVENTS

Example 1: JE21 (Typed version of hand written notes).

26/02/90

ERICA

1. Debriefing of In Service.

At staff departmental meetings decisions need to be made about which units re to be prepared.

(a) Call for units – choice; work with volunteers at point of need; focus on part of a unit.

(b) ESSAY writing skills- basic frame for this skill. Teach a logic structure. Invite library staff to the next meeting for input.

(c) ACTION PLAN

(1) Units lower school

(2) Library – ____ to input library on note making, Bibliography and essay writing skills.

Meeting closed 3:50 pm.

Next meeting Monday 12/3

Example 2: JE20

PSP - ERICA STREERING COMMITTEE
MEETING NOTES 11 DECEMBER. 1989

Present - _____, P. Havel, _____

1. During subject meeting time on one of the student-free days, departments concerned to meet in the library for a short introduction to the notion of ERICA, and to explain expectations for the year.

2. Plan

2.1 TERM ONE WEEK THREE. Friday pm and Saturday am.

Introduction to ERICA on Friday evening, followed by supper. Workshop and wind-up meal on Saturday.

2.2 TERM ONE WEEK FIVE. Friday pm and Saturday am.

Intensive workshop for teachers who have volunteered to be curriculum writers.

2.3 TERM TWO WEEK TWO. Friday pm and Saturday am.

Evaluation of draft programs with larger group.

3. English should look at identifying transactional areas to program rather than focusing solely on particular units.

4. Need to build in the notion of composite assessment as per Social Studies. Students are assessed at different stages of an assignment's progress., e.g. for initial stages of assignment students might achieve a *D*, next stage (e.g. draft) might permit upgrading to a *C*; and final stage a possible *A* grade might be awarded.

A unified strategy for note taking needs to be adopted - see librarians. A unified strategy for essay writing should be adopted. _____ to compile notes to be reviewed at future meeting.

6. Meeting with principals (6112/89) successful. Seemed enthusiastic about unified approach and establishment of literacy committee. We are to contact primary schools and other interested parties early term 1 to convene meeting in week 3 of term one.

APPENDIX C

NOTES AND INTERVIEW TRANSCRIPTS OF KEY PERSONNEL INVOLVED IN THE ADOPTION AND IMPLEMENTATION OF ERICA

These interviews were conducted between December, 1989 and December, 1991. Some of the responses are paraphrased and not written verbatim. The numbers in the brackets represent times on the tape recorder.

Interview 1: December, 1989. Principal (In1).

The substantive principal left the school at the end of 1989 and went on long-service leave.

Question 1: (0- 4:28). How did the notion of Literacy Across-the-Curriculum (LAC) develop at the school develop?

I inherited the school's concept of LAC in 1987. It was seen as the responsibility of English Department where he Head-of-Department had introduced initiatives such as spelling journals and compact spellers.

Everybody was keen to participate. Commitment and enthusiasm was there, but implementing the Unit Curriculum was creating problems. Everybody became too busy with preparing units and carrying out other administrative tasks to implement LAC as a set program.

Quote: "The teachers did not have the time, or in fact the energy, to implement LAC as a set program. Everybody was aware of the literacy problem, but were unable to deal with the issue, even though it was a top priority".

Creating a Department of Support was seen as an important initiative in addressing the literacy problem. They were using ERICA strategies and a team teaching approach. i.e. First LAC initiative.

English and Social Studies departments were assisting the Support Department.

Havel's suggestion for leave was seen as fitting into climate of Ed Support and literacy needs.

Principal was conscious of a number of problems:

- The overloading of teachers.
- Students with the low levels of literacy entering the school.
- Secondary teachers not being trained to teach literacy like primary teachers. Instead, they placed too much emphasis on the teaching of subject content.

Principal was keen for Mr Havel to work in science department because it traditionally resisted the impost of LAC. Considered it important for the building of literacy awareness and integrating literacy into normal teaching.

Question 2: (4:28- 6:06). What role does the Principal and the School Based Decision Making Group play in a LAC project?

Why SBDMG?

- Involves community in school decision making.
- Parents are made aware of the schools developmental priorities.
- Helped teachers, parents and students to identify literacy as a major priority. District School Development Officer, who was a Head of the Support Department, made a major contribution in the development of 1987/ 88 plan. She facilitated the identification of the priorities.

Question 3: (6:06-8:09). What are the positive aspects of the LAC?

Good literacy skills are essential for a successful teaching environment and student learning. Teachers need to participate in such programs to get good results ie see students learn.

Teachers react negatively to imposition on their teaching program. They do not like being told what to do! Involving teachers in change produces better outcomes. Small changes are better than large-scale change.

Question 4: (8:09-10:15). What are the negative aspects of the change?

Quote: “Most curriculum changes across-the-curriculum fail in the Ministry. Change that is imposed will not be successful unless the change is properly supported i.e. resources such as personnel and time are provided. For example, the Management Student Behaviour (MSB) program had political importance so the support was there”.

Ministry not committed to literacy. They are willing to accept a reasonable level of poor literacy. When they are committed, the resources will be provided.

Question 5: (10:15-12:52). What is the future of the school base LAC initiative? How will it unfold?

LAC has to be within the curriculum structure and concentrate on the child's learning in the classroom. It must be a normal part of learning environment The total needs of child must be addressed. When this occurs, the initiative will be successful. Teachers have to be skilled- able to do it! i.e. training has to be provided. Furthermore, there needs to be recognition to the teacher for the job that they are doing. Materials need to be provided. Comparison with the implementation of Vocational Education was made.

Change must be structurally based. N.B. made mention of changing staff having a negative impact unless the change has structural roots.

Planning has to have a review cycle.

Interview 2: December, 1990. Acting Principal (In2).

The Deputy Principal in 1989 was appointed principal in 1990.

Question 1: (0-2:01). What is your understanding of the priority the school has placed on literacy?

The principal identified the author's involvement at the end of 1988. He described how the author's teaching load in 1990 came about. The author's time was 0.5 FTE from the District Office with some additional time allocated to the development of the ERICA program. Literacy had been identified as an important priority.

Priority School Program (PSP) funding was mentioned in terms of development of priorities.

Question 2: (2:02-3:19). Can you explain how the PSP involvement in literacy came about?

Quote: "There was a perceived need by the administration for a PSP Coordinator. This person had the responsibility of determining needs within the school. Literacy was identified as one of those needs".

Discussion would have occurred with the Social Studies Senior Teacher, who was also the PSP Coordinator, and the English Senior Teacher with regards literacy within the school.

Two threads of the PSP program and the author's interest in literacy came together at the end of 1989.

Question 3: (3:20-9:25). A lot of money was allocated to the development of ERICA- around \$10,000.00. You became worried. Can you explain your fears?

The magnitude of money was the main concern. He wanted at least one person governing how the money was being spent, perceiving a need to add a curriculum Coordinator to the PSP Coordinator's role. The school's administration discussed how the school should allocate its special responsibility allowances within the school. Joan Chapman was considered to have the skills and experience to carry out the role and was appointed by a panel early in 1990.

The Coordinator's role was seen as critical for things to move in a school where a lot of things were happening with the Unit curriculum already having a big impost on teacher time. The Acting Principal mentioned some resistance from the previous Principal to implement ERICA because of the impost of the unit curriculum. However, the point was made that with the appointment of a PSP Coordinator and

Curriculum Coordinator would alleviate many of the problems, especially those related to time and resources.

The appointment of the two Coordinators was also seen as improving communication by informing teachers of the changes and what progress was being made. This would ensure that some teachers didn't withdraw because of uncertainty and that teachers would own the changes because they could see the benefits of ERICA.

Question 4: (9:26-12:42). There has been a change in focus for 1991 with the Curriculum Coordinator's role disappearing and being replaced by the ERICA Coordinator. There has been some debate over this decision. Could you please elaborate?

The problem arose because of limited resources. ERICA had become the main vehicle for literacy across-the-curriculum with the Curriculum Coordinator's role focusing more on ERICA. This did not imply the other curriculum areas were unimportant; rather, there was greater emphasis being placed on ERICA. Greater amounts of funds had been made available for ERICA implementation in 1991 at the expense of other curriculum projects.

The senior teachers strike was seen as affecting communication and the amount of curriculum activity.

Question 5: (12:43-13:16). How do you see the ERICA program unfolding in 1991?

The Acting Principal contended that there should be a widespread implementation of the ERICA strategy with the teachers producing the required teaching resources as a consequence of the growing ownership occurring in the various subject departments. 1991 was seen as a year of consolidation.

Concluded: 13:16.

Interview 3: December, 1989. Senior Teacher English (In3).

This Senior teacher taught a unit using ERICA strategies and was the main driving force behind the ERICA implementation in the English Department before moving to Perth in 1991. He was a member of the management group charged with the responsibility of implementing ERICA.

Question 1:(0-4:32). How did you find teaching ERICA?

He found it time consuming preparing the work. Other teachers in English had the same perception. Resource purchases was seen as only one way of overcoming the problem, but much of the available material was not directly relevant. For example, much of Bayswater's ERICA resources related to fiction texts and ERICA was more appropriate for factual books.

The Senior Teacher purchased transactional (factual) texts with ERICA project money, focusing on chapters rather than whole texts. He saw a definite change in the

way he taught, emphasizing the importance of developing skills rather than subject content. The transactional text areas were previously poorly taught. When he started teaching this section of unit, the students were to produce work from transactional texts and then assessed on what they produced. Previously, little effort had been put into the process, but ERICA has given him a way to teach it.

Question 2: (4:33-6:00). Did student interest wane as you proceeded to teach the unit?

Quote: “No. Their interest was maintained. I found that strategies learned were transferred to my upper school classes, especially in the domain of essay writing.”

Question 3: (6:01-8:09). What ERICA strategies did you use?

Quote: “I concentrated mainly on strategies that focused on the structure of texts and did not use many word games. For example, I used structured overviews, graphic outlines (mapping) and key words before requiring students to produce a small piece of written work.”

Question 4: (8:10- 13:05). Could you identify some resisting forces?

Quote: “ Teacher enthusiasm was low and mitigated against the implementation of ERICA. There were difficulties getting people enthusiastic and then maintaining that enthusiasm. After the initial inservice I was motivated, but was unsure how to apply the new knowledge and needed support. The first induction workshop earlier in the year provided this support and direction for the development of my teaching”.

Time was seen as a problem and teachers had been unable to develop the needed resources. The strategy of offering money for teachers to write units had not worked. He had been forced to have a meeting in the evening with his staff where they discussed program ideas with three emerging. Teachers have tried to implement the ideas, but little of the findings, or what occurred in the classrooms, had been committed to paper in a way that can be shared with other people. The implementation has been successful to the extent that teachers were using programs and ideas. However, failed to achieve the original objective that was to have publishable units by this point in time. He was unsure if could overcome this problem.

The point of whether the new S.T. English replacing him in 1991 would continue his work was raised. He believed this would occur, especially since there was a person to be employed to coordinate the development of ERICA. This coordinator was seen as having enthusiasm, good communication skills, wide understanding of literacy related to the different curriculums because of her involvement in the support department and because she had been an English teacher. She was seen as giving ERICA a high profile and that without her, the program would have little prospects of success. The English teachers were seen as needing prompting to maintain motivation. Furthermore, he went on to suggest that the Social Studies department was uninterested with the senior teacher encountering problems trying to implement ERICA.

Question 5: (13:06- 14:00). Could you identify some driving forces?

Quote: “ERICA offers strategies to teach a nebulous area of the English curriculum that relates to transactional texts”.

The literacy emphasis was seen as important, that is, the notion of how information is put together in texts.

Question 6: (14:01- 22:01). How do you see the implementation of ERICA unfolding next year?

The ERICA Coordinator to meet with the Senior Teachers of the different departments involved. She would work through the literacy committee with the focus being solely on implementing ERICA. This would maintain the profile of ERICA.

A concerted effort was seen as being needed over the next few months so that some packages would be finalized. This led to another driving force being emphasized: the existence of appropriate resources. He saw that resource development should continue over the next year. His department did not need to purchase many books because the library provided resources where small sections could be photocopied.

The influx of new teachers was seen as a problem because they would need to be inducted. Exposing the new teachers to ERICA strategies was critical because the use of ERICA strategies led to the motivation of many teachers.

Time was only a problem when seen in the context of producing packages. However, producing work for his class was not viewed in the same way. Worksheets were seen as springboards to other work. They were only the introduction to other work that took longer to complete. He saw student writing has having improved, especially in the focus classes.

Concluded: 22:02

Interview 4: December, 1989. Social Studies Senior Teacher (In4).

The senior teacher was involved in the ERICA project from its inception. Furthermore, he was the PSP Coordinator who coordinated the overall development of the submission where ERICA was given the top priority.

Question 1: (0-33). When did your interest/ involvement in ERICA begin?

Over the previous two years, he had attended a number of meetings where ERICA had been discussed. Toward the end of 1989, he attended a workshop conducted by ----- from the Bayswater District Office. After the workshop, he co-operated with another social studies teacher to produce an Aboriginal Studies Unit that is now on Bayswater's ERICA register.

Question 2: (34-1:33). When did you become involved with the English Senior Teacher in preparing the PSP submission?

After the Seminar, we started to discuss prospects. At the same time, started to discuss matters with the author. Didn't realize that author had been involved with the Principal and the District Office in organizing study leave to develop a project along similar lines.

Literacy was a priority. He saw the advantage of an across-the-curriculum thrust. All components came together at the same time.

Question 3: (1:32- 3:06). How did you see the proposal coming together from the earlier discussion?

He thought the across-the-curriculum thrust should be restricted to science, English and social studies. Priority Schools Program (PSP) money was to be used to finance the across-the-curriculum implementation. A committee was set up and a submission was prepared for 1990. It was planned to start with an inservice for interested teachers run by the Education Support Teacher. This inservice was to be followed by others designed to assist teachers prepare their own units.

Question 4: (3:07- 4:53). Could you please identify the resisting forces?

The lack of teacher commitment to write up ERICA units. He perceived that teachers were only using some strategies, but not committed to the whole concept of ERICA.

Author: "Operating off strategies, but not understanding the stages and the whole process".

S. Teacher: "Yes. They have just used parts of the whole strategy. They haven't looked at the whole process. They have just taken bits and pieces from it and tried to implement it without knowing exactly where it fits into the whole process of the ERICA strategies".

Time. He believed ERICA would require too much time to implement. Perception was due to the lack of understanding of the whole process. This affected their commitment.

Question 5: (4:54-6:15). Could you please identify the driving forces?

He saw the improvement in student learning as the greatest strength of ERICA with the understanding of work greatly improving.

Variety. Students like working with the different strategies and they helped to maintained interest in the subject. There was a greater sense of achievement as the students moved through the stages.

Definitely improved writing competence.

Question 6: (6:16- 7:18). Seeing you view the strategy so positively, what impact do you think the Senior Teacher strike has had on the implementation?

Quote: “Considerable. We have been unable to meet with teachers to encourage their involvement and as a consequence, the implementation has been affected. There has been a loss of the personal touch”.

He liked the concept of a coordinator being appointed for 1991, seeing this person as being able to provide the personal touch. The person would not be a senior teacher and would be able to work across-the-curriculum along side the teachers. Hence, the change would not be imposed, but encouraged.

Question 7: (7:19-8:49). How would you summarize this year?

Quote: “There has been some positive outcomes, but I am disappointed in terms of my own department”.

Concluded: (8:49).

Interview 5: Acting Senior Teacher of Science (In5)

This interview was conducted with the acting senior teacher of science, October, 1990.

Question 1: (22- 48). How long have you been at the school and what has been your role during 1990?

This was his second year in the school as Relieving Senior Teacher of science with his major teaching area as biology.

Question 2: (49- 1:27). How were you exposed to ERICA this year?

At the start of the year, there was an inservice on ERICA. As there was money available for implementation, he thought the science department should be involved and encouraged 5 science teachers to attend.

(N.B. He did not realize the inservice was organized and run by the school)

Question 3: (1:28-2:27) Who were the main change agents behind the ERICA program?

Initially, he did not know about the ERICA committee, but found out more about the committee during 1990, attending half their meetings.

Question 4: (2:28-3:44). Last term you became involved in a project. Can you give some background?

Quote: “Currently I’m studying for a post graduate degree. I have to design and implement a curriculum program, so I took advantage of the ERICA climate and linked it to my studies. The main motivation, however, turned out to be the strategy itself”.

Question 5: (3:45-5:58). How did you come to understand the purpose of ERICA?

Quote: “Originally I thought ERICA was to improve the literacy of the students. After becoming involved, I came to understand that it is a learning technique rather than just a literacy program. (Alluded to a link with constructivism)”.

Question 6: (5:59-7:26). Does ERICA improve reading and writing skills?

He viewed the strategy as primarily improving understanding of concepts rather than literacy skills. The development of writing is a long-term goal. If the strategy is used consistently, then it would have a dramatic impact on the development of writing competence.

Question 7: (7:27-8:46). Did you find the classroom climate improved with the implementation of ERICA?

Quote: “Yes, dramatically! The new strategies, and the subsequent lesson variation, motivated students”. He saw his own teaching improved because of greater student motivation and interest).

Question 8 : (8:47-11:42) What do you see as the resisting forces?

Quote: “The fact is that ERICA is difficult to implement in the current environment. Writing units is difficult because of available time. There are so many other priorities facing the science teachers that writing units becomes a low priority”.

The senior teacher strike was seen as having little impact on the implementation of ERICA. He contended the way to write units would be to get a person with an imaginative/ organized style and pay this person to write ERICA blocks. Providing relief for a teacher was not seen as a viable option and that the work would have to be done by a person without a teaching load.

Question 9: (11:43-12:34). Do you think there is a strong understanding of ERICA amongst the science teachers?

Quote: “No. Some understanding of particular strategies, but little understanding of an overall philosophy - especially the stages. Individuals need to read up themselves. At the moment, the teachers are succeeding with their teaching and see no need to change”.

Question 10: (12:35-18:24) What do you see as the driving forces behind ERICA.

Quote: “As ERICA entered the school, I started to develop interest because of the obvious enthusiasm. This interest was heightened by the need to develop a project for my university studies”.

He did not see teachers being motivated easily to write units with money, seeing them being more motivated by their desire to be better teachers. The money played a role in encouraging teachers to share their prepared work. i.e., adding value.

Student interest was seen as a motivating force in encouraging students to take up the ERICA strategy. ERICA was seen to motivate science teachers when it was viewed as a means of enabling students to better learn science concepts. The development of writing competence was seen as a secondary goal.

Question 11: (18:25- 20:28). How do you successfully implement ERICA across the school.

A coordinator was seen as critical for a successful implementation. He had suggested that in 1991 that a coordinator be appointed and prepared a submission where 0.2 FTE was set aside for the appointment of a coordinator and paid for with PSP funds.

The issue of continual staff turn over was raised in the context of training staff that was seen as an on-going issue.

Concluded: (20:28).

Interview 6: December, 1990. Science Teacher & Curriculum Coordinator (In6).

Question 1: (0-46). What is your understanding of ERICA?

She saw it as enrichment in curriculum areas because it developed skills needed to access information in texts. She used strategies such as hang-the-man, crosswords, matching key words, concept maps ...etc. Found the concept maps helpful in directing the teachers and students.

Question 2: (1:47- 2:46) How were you introduced to ERICA?

She had heard of the strategy, but not directly involved. First introduced to it through a network meeting in Newman and then had attended a Support network meeting where a ----- presented a workshop on ERICA.

Question 3: (2:47-9:17) As a curriculum coordinator, what was your role in the implementation of ERICA?

Quote: I receive an induction through ----- workshop. She developed an awareness of ERICA and gave me some background to write ERICA units”.

There was a period following the inservice where little occurred where the senior teacher strike was seen as having some impact.

The coordinator was involved in a networking with ----- and this led to her suggesting that she inservice the science department. This occurred.

She was involved with District ERICA committee in the interface between primary and secondary, assisting in the coordination with the development of primary and secondary submissions.

Alluded to the ERICA coordinator being involved in organizing the literacy committee. Thought the coordinator was a good idea to make ERICA a higher priority.

Question 4: (9:18-1:27). Could you please identify the resisting forces?

Quote: "Time is a critical factor affecting effecting the production of ERICA resources. The monetary rewards are only part of the answer. Recognizing a teacher's work is very important".

New teachers. The induction committee was seen as having addressed the issue as best as possible. Ongoing induction was needed to introduce new teachers to ERICA.

Question 5: (11:28-17:65). Could you please identify the driving forces?

ERICA packages were seen as enhancing the use of ERICA. Young teaches would then have a friendly set of materials that are easy to adapt and implement. Induction was seen as being needed.

The ERICA strategies were seen as improving classroom climate by making lessons more interesting. Students responded well to many of the strategies, especially concept maps.

She saw the strategy as eventually improving writing skills. In this context, concept maps were seen as an essay plan.

Question 6: (17:56-19:20). Where do you see ERICA next year?

The induction program and the appointment of an ERICA Coordinator was seen as assisting to overcome the expected loss of staff.

Concluded: 19:20.

Interview 7: December, 1990. English Teacher (In7).

Question 1: (0-25). Did you have any knowledge of ERICA before coming to the school?

She had attended workshops at Lockridge SHS about 3 years prior coming to the school.

Question 2: (26-37). Did you participate in the ERICA workshops at the school?

Quote: “Yes: but only partially. Left part way through the first session because of another engagement”.

Question 3: (39-52). Describe your working knowledge of ERICA.

She had been operating from working knowledge developed at another high school where she had been a reading resource teacher. ie had a strong literacy background.

Question 4: (53- 1:18). When took over a class from -----, did he inform you about his ERICA program?

He had mentioned it, but had not handed on any prepared programs.

Question 5: (1:19-1:55). Could you please describe how you used ERICA in classroom?

She claimed that ERICA strategies have been around for a long time and it had given more structure to strategies such as note taking, skimming and scanning, ..etc.

Question 6: (1:56- 3:07). Why did you ask for a copy of the summary of the strategies?

Quote: “The summary contained new strategies that introduce variety into lesson presentations. They add interest to classroom activities and relieve boredom. Other teachers with no exposure to ERICA have asked for a copy of the summary. Students see teachers using a variety of strategies over a number of disciplines and start to adopt the strategies themselves. They become part of their learning processes.

Question 7: (3:08- 3:55). Have students improved over the year?

The student writing was seen as having improved, but she was unable to say in regards to reading- didn't formally test. Her assessment was based on perception ie the marks the students were obtaining and the student use of language. ERICA was seen as being one factor in the improvement.

Question 8: (3:56-6:19). What were the driving forces for ERICA?

Quote: “ERICA is so structured that it would help students learn their subject matter/ facts, especially in subjects like Social Studies and Science. In English, ERICA would make the students more efficient readers. This improvement would assist in the development of other skills such as reading, writing, ...etc”.

The variety of presentation adds interest to the classroom.

Clarification of learning structure. When the teachers realize the purpose behind the ERICA stages/ strategies, they become motivated toward implementation.

Improvement of student literacy skills.

Question 9: (6:20- 7:47). What were the resisting forces for ERICA?

The strategy was restricted to transactional texts.

Time. Teachers were seen as being under pressure to finish units within a given time frame and ERICA required considerable time to implement effectively.

Resources. At the time of it being implemented, there was a lack of resources, but they were being gathered. The preparation of materials was not seen as a hindrance because the teachers would have to do it anyway.

Thinking time. When implementing a new idea, you use more time than if you were using a tried strategy because you need to think about the application of new ideas.

Conclusion. 7: (7:48- 8:20). The positives of ERICA were seen as outweighing the negatives.

Interview 8: December, 1990. Social Studies Teacher (In8).

This social studies considered he was “doing” ERICA, but did not attend any of the workshops. He was the subject of the classroom observations.

Question 1: (00- 1:09). How much do you concentrate on Language in the classroom?

Quote: “Enormously. Language is critical to thinking and learning. Social Studies lends itself to the use of language. The communication and the thinking/ analyzing ..etc”.

Question 2: (1:10- 2:09). How do you carry this out?

Quote: “Firstly, I concentrate on one text book. In addition, I bring into the classroom outside resources: cartoons, maps, newspapers, other references that support/ extend work in original text”.

Question 3: (2:10- 3:36). How does a typical lesson unfold?

Quote: “Firstly, I concentrate on motivation. The teacher is most important and must know their subject. Secondly, I use other strategies to develop understanding”.

Question 4: (3:37-5:40). Highlight some of the language strategies used in the classroom.

He saw language strategies are a critical component of any classroom. The ERICA strategies were seen as being used by any good teacher. eg close activities, emphasis

on spelling, main point in paragraphs, ...etc. When describing these strategies, he was reading off one of the strategies sheets used in the evaluation.

Question 5: (5:41-5:51). Did you participate in any of the training seminars for ERICA?

No!

Question 6: (5: 52- 6:58). How do you know what ERICA is ?

Quote: We discussed this before. I originally thought ERICA was new, but after the discussion with you I started to see that it was just good teaching. I return to an earlier point: every good teacher should be using ERICA. The strategy is a foundation to teaching”.

He suggested that ERICA should be part of teacher training: something a lecturer has to go over with their students.

Question 7: (6:59- 8:10) Is ERICA more than strategies? Do you pay much attention to the stages?

Quote: “Yes, but not as well defined as on your sheet. Returning to the earlier point. Teachers at colleges should be provided with such a sheet as part of their training. Teachers should practice the formation of lessons based on ERICA”.

Question 8 : (8:11- 9:06). Do you think ERICA would assist in developing student writing?

Quote: “Yes. The strategies are about language and involve thinking. The student has to put the information in their own language”.

Question 9: (9:07- 19:53). Could you describe the resisting forces?

When asked about the lack of teaching resources possibly being a resisting force, he responded: “ERICA is just teaching. A teacher is not teaching unless they are using the program. Unit development / resource production is part of normal teaching. A school should not be paying for the development of units. Teaching institutions should be teaching this before teachers are posted to a school”.

He was against the way PSP funds were currently being spent in the school. As seen in his quote, he saw time spent on preparation as being a part of normal teaching. He saw value in the preparation of resource materials, but not in a paid situation. Suggested a network bank. ie a good resource should be shared.

He touched on constructivism, but did not clearly make a distinction between imparting and facilitating the development of knowledge. His focus was more on motivating students to learn the knowledge he had to impart.

Question 10: (19:54- 22:25). Could you please describe the driving forces?

ERICA was seen as a very good methodology with the program improving literacy skills. He admitted that he hadn't considered the stages much, but thought the structure was good.

Variety was important for motivation.

Concluded: (22:26).

Interview 9: December, 1991. Principal (In9).

The new substantive principal was appointed in 1991 replacing the acting appointment who resumed his normal role as the Deputy Principal.

Question 1: (0- 1:36). Can you describe the qualities of the ERICA Coordinator and how she impacted on the staff?

He didn't know much about the ERICA program until receiving notes about ERICA and an invitation in his pigeonhole. His decision to participate was based on a perceived lack of knowledge about literacy- he had a physical education and computing background.

The first workshop was seen as impressive. He believed her logical presentation and method of teaching- an experiential emphasis - led to the captivation of staff. ie you did it yourself rather than being talked to.

For him, the information gained from the workshop was not immediately usable, but saw the workshop as having given the teachers a very structured way of language development within a subject domain.

Question 2: (1:37- 3:40). Do you have any feeling for how other teachers pick up ERICA?

Quote: "Her presentation motivated the staff to go away and implement. She was always available to assist".

The reason why staff had been so willing to take up the program was broached. He had the impression it was a follow-up program- much of the ground work had been done in the previous year. The ERICA Coordinator was seen as a critical factor in carrying the program through. A lot of other people would not have succeeded in the manner she did.

Question 3: (3:41-4:34). How do you see ERICA going next year and in the future?

He expressed concern that the ERICA Coordinator was going. A replacement reading resource teacher would have to be found. An expression of interest to be taken onto the Stepping-Out program had been made. The ERICA Coordinator had been accepted as a consultant on this program. However, he believed the program had been established enough for it to last without the ERICA Coordinator.

Concluded: 4:34.

Interview 10: December, 1991. Female Deputy Principal (In10).

The Deputy Principal (female) was a new appointment in 1991.

Question 1: (0-1:24). Can you outline your involvement in the ERICA workshops this year?

She had attended the four workshop, contending that the administration should be involved in supporting a priority and demonstrating this to the staff. In addition, she was interested in finding out about ERICA.

Question 2: (1:25-2:26). What level of support did you see from teachers?

Quote: "70% of staff attended the workshops with somebody attending from every department. Manual Arts and Mathematics were the only departments that didn't fully support the program. They have traditional attitudes to literacy where they don't see language development as part of their brief".

Question 3: (2:27- 3:29). There has been a significant change in attitude of staff toward ERICA since 1990. What part has the ERICA Coordinator played in this transformation?

Deputy: "Substantial part. She has the ability to stand up in a staff meeting. Motivate people and then follow-up that motivation by getting them to make a commitment. Basically hounding them until they do make a commitment".

Author: "She drove the change".

Deputy. "Yes. Totally. And you find that you make the commitment and go along to the workshop, but if you find it no good you won't go back again. But the workshops were excellently put together. Really well presented".

Author: "Her credibility was very high".

Deputy: "And we all came away with a package. With a great understanding of everything. Quiet keen to come back to learn the next section. She motivated us the whole time. And she bribed us with a good afternoon tea".

Question 4: (3:30- 3:55). How much time did she put into the project from the beginning until the end?

Quote: "She went way over the 0.2 time throughout the year. The project certainly needed somebody to drive it like this".

The success of ERICA was seen as being dependent on the ERICA Coordinator.

Question 5: (3:56-4:11). What resources did the school assign to this project?

Finances were through Priority School Program (PSP) Funds.

Question 6: (4:12- 4:52). How much have teachers changed as a consequence of the project?

Quote: “Teachers have changed in the way material is presented. They are starting from where the kids are ie linking activities to student ability”.

She had no concrete evidence of how the students had received the changes.

Question 7: (4:53-5:42). How do you see next year unfolding?

Quote: “Because of this project, there has been a major submission for PSP funds to develop literacy next year. Literacy is a priority identified for development. Other funding groups such as ASSPA were to be approached to contribute. The school has also asked to go onto the stepping-out program. This is because of what has gone on and because teachers want it”.

Concluded: 5:43.

Interview 11: December, 1991. Senior Teacher Social Studies (In11).

The senior teacher was the only senior staff member remaining on staff who had been there since the inception of the program.

Question 1: (0-1:38). Last year you had difficulty involving your department in ERICA. This has changed. Can you please explain?

Quote: “Although the social studies department had participated in the inservices in the previous year, the training by the ERICA Coordinator was the key to change. She had inserviced the departments in their subject meetings with short sessions of about 1/2 hour duration”.

The induction package developed by the ERICA Coordinator was later used in a networking of social studies teachers at a Pilbra networking meeting where teachers from Karratha, Tom Price, Parrabadoo and Wickham attended.

Question 2: (1:39-4:25). What were the factors stopping teachers participating last year?

Lack of knowledge. The last year was seen as an initiation into ERICA. The positive input by the ERICA Coordinator led to teachers experimenting with ERICA and finding that it worked. The practical nature of the program brought about its success. In fact, he pointed out that the payment of staff to produce ERICA packages did not become an issue. Teachers were willing to produce their own materials because of their inherent value to their classroom teaching.

Special note was made of the ERICA Coordinator’s role: How she motivated the teachers to participate. For example, the issuing of certificates for completing the ERICA course. The ERICA Coordinator’s use of time was discussed and confirmed what the other interviews were saying: She had spent considerable time in the

beginning of the year preparing materials/ seminars and conducting the seminars. The later part of the year was not so demanding on her time.

Question 3:(4:26- 4:42). Where do you think it will go next year?

Quote: “We will have some models for teachers to emulate in the classroom and the packages will be available. So, it should go well”.

Question 4: (4:43-5:46). How did the students respond?

He contended that the students had responded very well. The involvement of the ERICA Coordinator and a social studies teacher in teaching a unit in Australian Government to underachieving students was described. An ERICA package was used to help the students to produce an essay. The results were very good.

In describing the response of the social studies teacher involved, the senior teacher said: “The teacher felt a great sense of achievement. He has gone on to produce other packages. There has been a major transformation in the teacher's attitude and response to ERICA”.

Question 5: (5:47-7:06). Have there been any negative outcomes from the implementation this year?

Quote: “No. There has been large scale voluntary involvement. This has included after school hours training, Administration participation, ..etc”.

Only concern was the lack of participation of the Manual Arts teachers, and to some degree the mathematics department. He suggested they may need to be targeted in the following year.

Diffusion model was seen to apply. Teacher knowledge and enthusiasm transferred by personal contact.

Concluded: 7:06.

Interview 12: December, 1991. Senior Teacher English (In12).

The senior teacher of English had been newly appointed, replacing the senior teacher who had been involved since the inception of the project.

Question 1: (0-3:14). You were appointed to this school at the beginning of this year. Obviously, you have worked with the ERICA Coordinator. Could you describe what has happened this year?

The English department was part of a whole school implementation of ERICA. He didn't see his department as having any special interaction with the ERICA Coordinator. All the English staff were involved in the workshops. Most of the teachers did the work in their own time.

He believed there was an unusual set of circumstances that had led to the commitment of the staff:

- Awareness. Some of the staff had been in the school last year and were aware of ERICA and the need for literacy within the school.
- Motivation. Some of the staff were new teachers and were highly motivated. Keen to succeed at their job.
- Encouragement. The ERICA Coordinator was seen as having provided the driving force for the change.

Question 2: (1:54-3:15). Can you outline the work of the ERICA Coordinator?

He saw the success of the ERICA Coordinator coming from her willingness to talk to the staff as a whole and her organizational skills. He highlighted the organization behind the seminars. They suited the people; and the times they were held were negotiated.

Question 3: (3:16-5:42). You alluded to the ERICA Coordinator's assistance in assisting you in other literacy projects, such as the establishment of a Management Information System (MIS). Could you please elaborate on the MIS.

He went on to describe the school's attempts to establish an MIS and how they were tending toward using the Monitoring Standards in Education tests.

Question 4: (5:43-7:09). How do you see ERICA assist student's progress in terms of their literacy development?

ERICA fits into all the other things that are happening in terms of literacy. He saw ERICA as just a re-packaging of what English teachers had been doing. It gives the teachers a framework or a focus for teaching. There had been a shift to greater use of transactional texts.

He saw the motivation of staff had come from the continuation of the ground-swell that had been previously developing.

Question 5: (7:10-8:37). What do you look forward to next year?

Quote: "The challenge for next year is the use of ERICA programs. I was a new appointee this year and the turn over in staff has inhibited progress. There has not been much curriculum development this year, but over the last term teachers have been writing packages to use next year. Now that we have been trained, have direction and the teachers are comfortable with the idea, we are in a position to fully implement rather than just dabble. Next year will be a time of consolidation".

Question 6: (8:38- 9:42). Do you think the students would have been impacted with ERICA this year?

He saw individual students on occasions being impacted, but no overall effect. There is no concrete evidence, but this was seen as changing with the development of the MIS.

Concluded: (9:43)

Interview 13: December, 1991. Program Coordinator (In13).

The Program Coordinator had been the acting Senior Teacher of Science in 1990.

Question 1: (0- 1:27). You were involved in having an ERICA Coordinator in the school for 1991. Could you explain how this came about?

As part of his postgraduate studies, he had seen American studies that suggested that coordinators are critical to success of non-core curriculum initiatives. He saw ERICA as fitting this situation. It was a program across the whole the school. He applied for funding to finance the appointment of a coordinator for ERICA with a 0.2 time release.

Question 2: (1:28-2:24). How did the school go about appointing a coordinator?

Quote: “Priority School Funds for the coordinator were approved. Expressions of interest were called for and only one person applied. This person was appointed”.

The background of the appointee was educational support with expertise in literacy, especially reading resource. She was an ideal person to select.

Question 3: (2:25- 3:24). Her work is being said to be very successful. Could you please explain?

Quote: “She was successful because she was a teacher inservicing other teachers. Her credibility came from being a teacher who knew her work. She came from the school community and was not a person who they saw as being flown up from Perth to tell them how to teach and then leave. Teachers accepted her because she was part of the school community, her enthusiasm and their ownership of her role”.

Question 4: (3:25- 3:54). How was her time distributed?

He described he time distributed as being in a wedge shape with most of it being spent in the beginning of the year and tapering off to very little toward the end. She worked very hard at the beginning of the year establishing how she would inservice people and she learnt as she went along.

Question 5: (3:55-5:20). How successful has it been in other departments?

Quote: “Unprecedented: 70% of the staff were involved in inservices outside of school hours. Only non-literacy areas such as Manual Arts and mathematics were not fully involved. Some mathematics teachers came along and went away enlightened and enthused. The administration also attended and contended they used some of the

strategies in their own communication with staff. ie The whole school was impacted”.

Question 6: (5:21- 8:22). Were there any resisting forces?

Allocation of funding. Only considered salary and funds for employing people to write units and did not consider incidentals such as morning teas.

Time- not seen as great a problem as in previous years. The money available to write units was seen as having little impact because the people who would have written the units would have done it anyway. Surveys indicated that the teachers had learn't a lot, but had not had the time to implement. They indicated that they would do it next year. This year was seen as another learning year and not one of consolidation.

Discussed what would occur next year. The approx. 20 new staff were seen as needing to be inducted. Although funds had been made available for the ERICA Coordinator's position, she would be leaving to take up a position in the state's Stepping-Out Program. He saw her replacement as coming from the same curriculum background.

Concluded: 8:23.

Interview 14: December, 1991. ERICA Coordinator (In14).

Question 1: (0-6:06). Can you outline some of the key happenings in 1991?

She broke the ERICA induction into 4 separate workshops. Started with Social Studies where she attended every second meeting and presented one of the workshops. She saw the preparation as taking a long time (approximately 10 hours for each of the stages), but once it was completed, it was usable with the other groups within the school.

When she completed the trial with social studies, she determined that the induction would be better served by offering workshops after school. This was because everybody has subject meetings on Tuesdays- see was expected to attend the Support Department meetings at this time. Conducted 20 workshops, each of about an hour duration. An afternoon tea was offered as an incentive- money was supplied from school development funds. The administration showed further support by attending the workshops. Of the 61 teachers offered the course, 44 completed everything. Others completed various stages. At least a representative from each department attended. Certificates were prepared for those who completed the course.

District Office personnel attended some workshops. She also ran the workshop for surrounding schools such as Tom Price, Wickam, Karratha, Newman and Derby at the networking meetings.

Question 2: (6:07-14:12). What evidence do you have that the teachers used their training- applied it in the classroom?

The acting science senior teacher had collected some data, indicating whether or not teachers were using the strategies in the classroom. Her main evidence came from the impressions she gained from talking to teachers. For example, a social studies teacher was highly motivated after a workshop and produced ERICA materials where he had not in the previous year.

There was the difficulty of producing the initial worksheets. However, more people this year had taken up the offer of writing units with more people wishing to produce units than there was available money.

Maths and Manual Arts on the whole did not participate. She went onto a detailed explanation.

Question 3: (14:13- 19:36). Could you identify any resisting forces?

She attributed the change in attitude from 1990 to 1991 to organization: Giving people alternatives for attending seminars, sending people reminders to attend and providing the afternoon teas.

She agreed the coordinator's role was the only way it was possible to carry out the task. 73 hours were used in first term in organizing the workshops. Without this time and other resources, the implementation would not have been so successful.

Most of the time was spent in the first part of the year, but it would have evened out over the year.

She claimed that : " I didn't educated them on what ERICA was. I educated them on how much ERICA they were already doing".

The teachers came to understand the organizing framework. This resulted in greater acceptance and motivation.

Concluded: 19:37.

Interview 15: December, 1991. Science Teacher (In15).

Question 1: (0-4:24). Can you outline why you became involved in the ERICA program?

He wanted to be involved to broaden his teaching. In his first encounter with the author in 1990, who presented him with a survey form with all the ERICA strategies on it, he thought he should find out more. Having never heard of these strategies in the past, he attended the inservice organized by the Education Support Teacher (90), but did not think much of the presentation. Took away one strategy- the graphic outline- and used it. Students liked it, but felt he didn't apply it properly.

This year (91), the ERICA coordinator conducted several workshops that he attended. Found that his understanding of ERICA grew dramatically. The inservices inspired

him to see how easy it was to bring ERICA into the classroom. Described how prepared graphic outlines and word clozes on the computer.

He outlined how it took him a long time to complete all the workshops because of becoming ill. Only completed stage 5 (translation) in the previous term (3). When asked how much work in stage 5 was carried out in the classroom, he replied:

Teacher: "I haven't really. I have used it in Biological Change. I've used it there. That has been good".

Author: "Are there any reasons why you found it difficult to get started?"

Teacher: "It is harder to construct than the other then the other things which are real easy to do".

Author: "So the students also have difficulty with the writing stage?"

Teacher: "No, I don't think they are so bad at it. I think it just harder to make up to get them to do it in the first place."

Went on to outline how he was going to include a translation component in the unit Chemical Change.

When questioned whether translation stage included more than essays, he showed a limited understanding of the strategies that could be used within this stage.

Question 2: (4:25-6:19). Could you please describe some resisting forces?

Time. He saw preparation and the application in the classroom as requiring considerable time. There was a fear of what could happen when he was so busy.

Stated that in reality it had taken time, but he had enjoyed doing it because he felt he had created something of significance. ie wanted to show others- and did- when he had complete a section of work.

Lack of knowledge. The initial lack of understanding about ERICA hindered its uptake.

Question 3: (6:20- 8:09). Could you please describe some driving forces?

Lesson Variation. When saw what was involved, wanted to apply because felt it would improve his classroom. The students liked the variation.

Literacy. When on "prac"(Dip.Ed.), the senior teacher science emphasized the need to improve student literacy. This goal had stayed with him into his teaching career. ERICA was seen as helping to achieve this goal.

Money. Quote: "The money offered to write up ERICA packages was an incentive. I enjoyed developing new worksheets and preparing for the classroom, but needed an incentive to convert that work into a package that was able to be used by other teachers".

Concluded: 8:09.

APPENDIX D

RESISTING FORCES SURVEY

Participation and Equity (PSP) money will be used to implement an across-the-curriculum thrust to establish the ERICA strategy in the school. Before this is attempted, the ERICA committee would like to know how you feel about this idea.

Most people resist change. The following table contains 8 reasons that may be causing some concern about the implementation of the ERICA strategy. Could you please rank them, thereby indicating to us, what are your chief concerns about the intended change. A 1 would indicate the factor you are most concerned about whereas a 8 would identify the factor that you are least concerned about.

CODE	FACTOR CAUSING CONCERN	RANKING
A	<u>Lack of Rewards.</u> I will have to make an effort to bring about this change, but what do I get out of it? Probably very little!	
B	<u>Different Criteria For What Needs To Be Done.</u> I have both the skill and understanding to implement your change, but I don't agree with the way its being done at the moment.	
C	<u>Lack Of Motivation.</u> I can't be bothered with this!	
D	<u>Bureaucratic Hassle.</u> Those in charge seem to put obstacles in my path. Why don't they help me to get on with the job?	
E	<u>Lack Of Skill.</u> I don't have the skills to participate in this language change.	
F	<u>Misunderstanding.</u> I don't fully understand what you require. Unless I get more information, I will be reluctant to participate in ERICA.	
G	<u>Future Shock.</u> There is too much change in the curriculum at the moment. I couldn't cope with anymore changes. I'm already under too much pressure.	
H	<u>Lack Of Resources.</u> Unless you provide me with the resources I need to teach, I don't want to participate. I don't have the time to be preparing new things.	

APPENDIX E

DRIVING FORCES SURVEY

1. Name : _____.
2. Department : _____
3. Teaching Experience (Years): _____
4. Teaching Experience in _____ (Years) _____
5. My exposure to ERICA is :
 - a) Didn't know it existed _____ (please tick favoured alternative)
 - b) Heard of it , but don't use it _____
 - c) Use it infrequently _____
 - d) Use it regularly _____.
6. The advantages I can see for ERICA are :
 - 6.1 _____

 - 6.2 _____

 - 6.3 _____

 - 6.4 _____

 - 6.5 _____

 - 6.6 _____

APPENDIX F

THE ERICA TEACHER SURVEY NOVEMBER 1990

1.0 Background

1.1 Name : _____.

1.2 Department : _____

1.3 Teaching Experience (Years): _____

1.4 Teaching Experience in _____ (Years) _____

1.5 My exposure to ERICA is :

- a) Didn't know it existed _____ (please tick favoured alternative)
- b) Heard of it , but don't use it _____
- c) Use it infrequently _____
- d) Use it regularly _____.

2.0 Understanding

2.1 I understand the purpose of ERICA Yes No

2.2 Please describe the four ERICA stages:

Stage 1 _____

Stage 2 _____

Stage 3 _____

Stage 4 _____

2.3 Please list the ERICA strategies you know:

2.4 Which ERICA strategies do you use?

For the following questions, a scale is used. The abbreviations have the following meanings:

SA Strongly Agree; A Agree; UD Undecided; D Disagree; SD Strongly Disagree. Please circle the appropriate response.

3.0 Importance of ERICA

3.1 Do you think ERICA helps students to understand the required concepts?

SA A UD D SD

Please explain your answer:

3.2 Do you think ERICA develops student reading and writing skills?

SA A UD D SD

Please explain your answer:

3.3 Do you think the ERICA strategy teaches students how to find information in a textbook and to organize that information so that they can write about it?

SA A UD D SD

Please explain your answer:

3.4 Do you think ERICA develops student thinking or problem solving skills?

SA A UD D SD

Please explain your answer:

4.0 Satisfaction

4.1 Do the ERICA strategies make lessons more interesting and enjoyable?

SA A UD D SD

Please explain your answer:

4.2 The ERICA strategies bring a lot more variety into lessons.

SA A UD D SD

Please explain your answer:

4.3 The ERICA strategy has improved my teaching.

SA A UD D SD

Please explain your answer:

5.0 Future

5.1 The factors that I think would hinder teachers implementing ERICA in their classrooms are :

5.2 The factors that would encourage teachers to implement ERICA in their classrooms are :

5.3 I think it is important to write units so ERICA becomes part of this school curriculum.

SA A UD D SD

Please explain your answer:

5.4 I am willing to write ERICA in the last few weeks of this year. Yes
No

Please explain your answer:

APPENDIX G

ERICA STRATEGY SURVEY FOR TEACHING STAFF

Teacher Name: _____ Date _____

Subject Area: _____.

Units Studied: _____.

WRITING STAGE (ERICA)	STRATEGIES	SUB.	FREQUENCY			
			N	O	F	A
PREPARATION	1. Prepared Concept Map 2. Structured Overview 3. Word Sleuth 4. Crossword 5. Matching Test. 6. Word Bingo 7. Hang-The-Man 8. Interesting words chart. 9. Graphic Outline.					
THINKING THROUGH	1. Three level guide. 2. Word Cloze. 3. Answer Questions from a text. 4. Questions related to a diagram, map, or some other pictorial representation. 5. Main point paragraph. 6. Jumbled paragraph. 7. Worksheet requiring answers to specific questions. 8. Contextual Clues Sheet. (Find words and meanings					

WRITING STAGE (ERICA)	STRATEGIES	SUB.	FREQUENCY			
			N	O	F	A
	9. Think Sheet.					
EXTRACTING & ORGANIZING "	<ol style="list-style-type: none"> 1. Construction of a diagram. 2. Note taking. (Teacher demos the skill) 3. Summarise a section of text. (Take own notes without assist) 4. Construct a table. 5. Library research notes. 6. Compare and contrast. 7. Cause and effect. 8. Supporting details to Major Ideas. 9. Construct charts/ timelines. 10. Construct a Concept Map. 11. Pyramiding. 12. Outlining. 					
TRANSLATING	<ol style="list-style-type: none"> 1. Research assignment (draft essay submitted). 2. Experimental write-up without teacher assistance. 3. Letter eg. To the editor. 4. Play. 5. Fictional story. 6. Picture sequencing. 7. Essay supporting an opinion. 8. Book review. 9. Interview with a person. 					

APPENDIX H

ERICA STRATEGY SURVEY FOR STUDENTS

Student Name: _____ Date _____

TAG: _____.

Units Studied: _____.

WRITING STAGE (ERICA)	STRATEGIES	SUB.	FREQUENCY			
			N	O	F	A
PREPARATION	1. Prepared Concept Map 2. Structured Overview 3. Word Sleuth 4. Crossword 5. Matching Test. 6. Word Bingo 7. Hang-The-Man 8. Interesting words chart. 9. Graphic Outline.					
THINKING THROUGH	1. Three level guide. 2. Word Cloze. 3. Answer Questions from a text. 4. Questions related to a diagram, map, or some other pictorial representation. 5. Main point paragraph. 6. Jumbled paragraph. 7. Worksheet requiring answers to specific questions. 8. Contextual Clues Sheet. (Find words and meanings					

WRITING STAGE (ERICA)	STRATEGIES	SUB.	FREQUENCY			
			N	O	F	A
	9. Think Sheet.					
EXTRACTING & ORGANIZING "	<ol style="list-style-type: none"> 1. Construction of a diagram. 2. Note taking. (Teacher demos the skill) 3. Summarise a section of text. (Take own notes without assist) 4. Construct a table. 5. Library research notes. 6. Compare and contrast. 7. Cause and effect. 8. Supporting details to Major Ideas. 9. Construct charts/ timelines. 10. Construct a Concept Map. 11. Pyramiding. 12. Outlining. 					
TRANSLATING	<ol style="list-style-type: none"> 1. Research assignment (draft essay submitted). 2. Experimental write-up without teacher assistance. 3. Letter eg. To the editor. 4. Play. 5. Fictional story. 6. Picture sequencing. 7. Essay supporting an opinion. 8. Book review. 9. Interview with a person. 					

APPENDIX I

KEY FOR THE OBSERVATION OF CLASSROOM LITERACY ACTIVITIES

1.0 Discussion

- 1A Explanation of an ERICA activity.
- 1B Discussion related to an Experiment or a practical activity that has concluded.
- 1C Explanation of a mapping exercise.
- 1D Revision of previous work.
- 1E Introduction to a test.
- 1F Questioning related to new work.
- 1G Administrative Discussion.
- 1H Administration related to homework/ assignments.
- 1I Verbal test.
- 1J Discussion centered on a worksheet.

2.0 ERICA Preparation Activities

- 2A Prepared Concept Map
- 2B Structured Overview.
- 2C Word Sleuth.
- 2D Crossword.
- 2E Matching Test.
- 2F Word Bingo.
- 2G Hang-The-Man.
- 2H Interesting words chart.
- 2I Reading from a text.
 - 2I1 Teacher.
 - 2I2 Student.

3.0 ERICA Thinking Through Activities

- 3A Three level guide.
- 3B Word Cloze.
- 3C Answer questions from a text.
- 3D Answer questions related to a diagram or some other pictorial representation.
- 3E Main point paragraph.
- 3F Jumbled paragraph.
- 3G Worksheet requiring answers to

4.0 ERICA Extracting and Organizing

- 3G Worksheet requiring answers to
- 4A Construction of a diagram.
- 4B Note taking.
 - 4B1 Student Centered.
 - 4B2 Copied from the board or overhead.
- 4C Summarization of a section of text.
- 4D Construct a table.
- 4E Library research notes.
- 4F Compare and contrast.
- 4G Cause and effect..
- 4H Supporting details to a main idea.
- 4I Exploration. i.e. reflecting on written text.
- 4J Dictation by a teacher.
- 4K Construction of a concept map.

5.0 ERICA Translation Activities.

- 4H Supporting details to a main idea.
- 5A Research assignment. (draft essay submitted).
- 5B Experimental write-up (Student Centered).
- 5C Letter eg. To the editor.
- 5D Construction of a play.
- 5E Fictional story.
- 5F Picture sequencing.
- 5G Essay supporting an opinion.
- 5H Book review.
- 5I Interview with a person.
- 5J Write a paragraph.

6.0 Other (To be specified in Words).

APPENDIX J

ERICA OBSERVATION SCHEDULE

Teacher Name: _____ . Date: _____

Subject: _____ .

General Summary of Lesson:

Section 1: First 15 Minutes:

5	10	15

General description of the last 15 minutes:

Section 2: Second 15 Minutes:

5	10	15

General description of the last 15 minutes:

Section 3: Third 15 Minutes:

5	10	15

General description of the last 15 minutes:

Section 4: Fourth 15 Minutes:

5	10	15

General description of the last 15 minutes:
