Science and Mathematics Education Centre

Student Perceptions of Health Science Teacher Interpersonal Behaviour

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This thesis contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

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ABSTRACT

The major aim of this study was to investigate the use of the *Questionnaire on Teacher Interaction* (QTI) in health science classrooms in Tasmania, Australia. In the past, the QTI has been used in a number of learning areas. However, it has not been used in the learning area of health science.

This study involved 1,471 grade 9 and grade 10 health science students and their teachers in 75 classes. The QTI was used to study student and teacher perceptions of health science teacher interpersonal behaviour.

Statistical analyses revealed that the QTI is a valid and reliable instrument for use in health science classrooms. Quantitative results from the QTI were supported by qualitative data including comments from the students and a reflective narrative of the experiences of the researcher as a health science teacher.

An investigation into the associations between QTI scales and student attitudinal and cognitive outcomes revealed that all scales of the QTI related to student attitudinal and cognitive outcomes in health science classrooms. It is, however, the scales of Leadership and Helping/Friendly which make the greatest positive influence to student attitudinal and cognitive outcomes.

Health science students perceived their teachers as displaying high levels of leadership, helping/friendly and understanding behaviour, and low levels of uncertain, dissatisfied and admonishing behaviour. Teachers generally perceived themselves in a more favourable manner than their students did.

The students also perceived the less experienced teachers as less dominant and more oppositional compared to teachers with more experience. Female health science students generally perceived their teachers in a more positive way than male students and male students, in general, have better attitudes to health science lessons.

ACKNOWLEDGEMENTS

Seize the opportunity when it arises
Once missed, it may be lost forever.
FENG MENGLONG

The journey of this PhD has been an interesting one. Different people have had an impact on it in a variety of ways.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 Health Science in Tasmania

The health science learning area in Tasmania has undergone some major changes in the last seven years. First, the *Tasmanian Health and Physical Education Core Curriculum Document K – 10 (1998)* was developed from the strands and sub-strands of the *National Statement on Health and Physical Education – a curriculum profile for Australian schools (Australian Education Council, 1994)*. Secondly, the syllabuses for grade 9 and grade 10 health science classes were reviewed. Finally, the *Essential Learning (EL) Framework (2002)* was introduced into schools in Tasmania. It is important to note that in Tasmania, health science classes are often called health and physical education (HPE) classes.

The *Tasmanian Health and Physical Education Core Curriculum Document K – 10 (1998)* was designed with a holistic view of the student in mind. It reinforces the idea that all areas of human development are important. These include the areas of social, emotional, physical, mental, and spiritual development. The *Tasmanian Health and Physical Education Core Curriculum Document K – 10* is underpinned by seven 'main ideas' that aim to support the life long development of the individual and are:

1. Understanding the body;
2. Developing and applying movement skills in all environments;

3. Perceptions of being healthy;
4. Awareness of factors used in the maintenance of a healthy lifestyle;
5. Making healthy decisions;
6. Respecting and caring for self and others; and
7. Interacting and communicating with others.

(Tasmanian Health and Physical Education Core Curriculum K – 10, 1998, p. 4)

The K – 10 Graph (see Figure 1.1) demonstrates the relative importance of each main idea across the students' school life. For example, in grade 9 and grade 10, there is an emphasis on main idea 6: 'Respecting and caring for self and others', and on main idea 7: 'Interacting and communicating with others' (both of which involve interpersonal behaviour to a large degree). This remains fairly stable over their years at school.

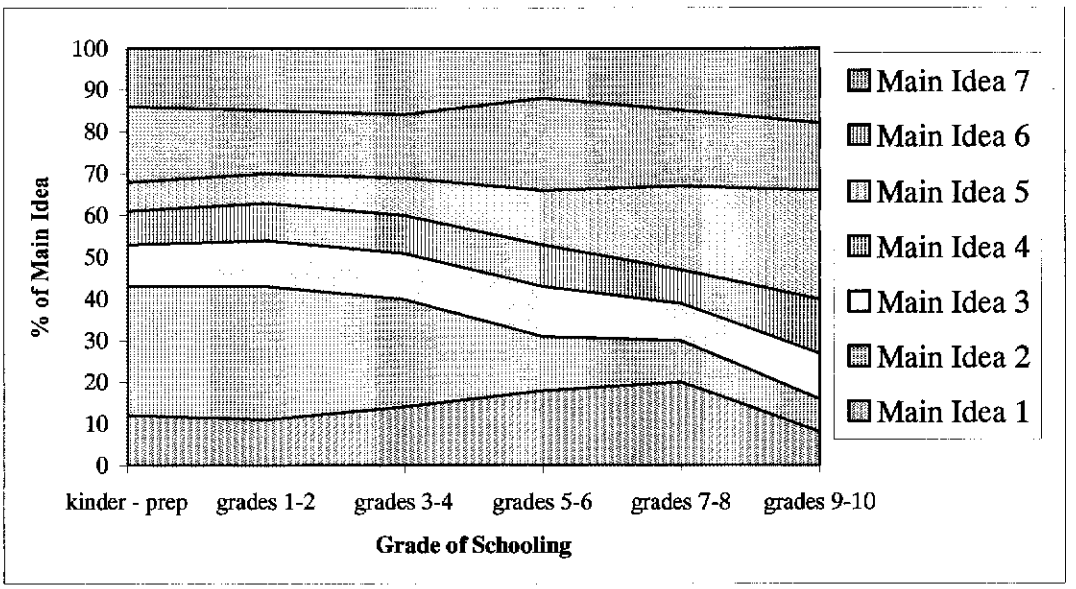


Figure 1.1. Relative emphasis on each main idea across the students' school lives. (Tasmanian Health and Physical Education Core Curriculum K – 10, 1998, p. 4)

In addition to the main ideas, the health and physical education curriculum has five core components called 'key intentions'. These are:

- **Responsibility**: To respect the rights of others and accept responsibility for one's own actions;
- **Identity**: To appreciate and accept oneself in personal, social and cultural contexts;
- **Relationships**: To interact positively with others;
- **Active Participation**: To value and enjoy the benefits gained from regular, lifelong participation in a wide range of activities; and
- **Well Being:** To optimise health and functional capabilities of self and others.

(Tasmanian Health and Physical Education Core Curriculum K – 10, 1998, p. 6)

Given these main ideas and key intentions, the health science learning area in Tasmania consistently places emphasis on students developing positive and meaningful relationships.

In Tasmania, the *Tasmanian Qualification Authority (TQA*) coordinates Syllabuses and Standards for grade 9 through to grade 12. The Syllabus documents contain information which include: a subject description, learning objectives, an outline of content and assessment information. The Standards document outlines assessment criteria and gives examples of what students need to achieve to gain each award. In 1998, the TQA undertook a review of the health science syllabuses for grade 9 to grade 12. This resulted in new syllabuses for these grades. This study is concerned with teacher interpersonal behaviour in grade 9 and grade 10 health science classrooms. The Tasmanian Health and Physical Education Core Curriculum K-10 (1998) underpins the new grade 9 (Appendix A) and grade 10 syllabuses (Appendix B). Thus, the underlying philosophy and aim of the new grade 9 and grade 10 syllabuses reflect the key intentions of responsibility, identity, relationships, active participation and well being.

The new health science syllabuses stress the importance of teaching students in a holistic manner. Each unit is approached by dealing with the social, emotional, mental, physical and moral aspects of health, both now and into the future. In the past, the majority of health science classes have been taught as two separate areas: health, and physical education. Typically, health has been theory or written based

and physical education has been practical or physically based. One of the major changes to the health science syllabuses was the amalgamation of health and physical education into one subject.

The TQA syllabuses for grade 9 (Appendix A) and 10 (Appendix B) encourage teachers to identify and teach specific skills, knowledge and attitudes to promote healthy behaviour by linking physical activity to each unit. The content of these syllabuses include the following units:

- Skill Application;
- Physical Fitness;
- Harm Minimisation/Reduction;
- Sexual Health;
- Exercise and Nutrition;
- Coping and Mental Illness;
- Food for Life; and
- Stress Busters and Body Image

(Tasmanian Secondary Assessment Board, 2003)

In the past the health science learning area has had a relatively strong focus on good interpersonal behaviour between teachers and students. With the new Core Curriculum Document and the new grade 9 and grade 10 syllabuses, this focus has been increased and reinforced. New units of work such as sports education are being designed with increased 'social' skills and relationships in mind. The emphasis has moved to the 'whole child' rather than parts of the child. No longer is it acceptable to 'just play a game'. Teachers and students are looking for more, and the direction in which Tasmanian health science is heading seems to be positive.

The *Essential Learning Framework* which has been developed and is being implemented into Tasmanian schools, is designed to:

- reduce problems of a crowded curriculum;
- engage learners more deeply in their learning;
- make learning more relevant;

- improve learning across all areas;
- develop higher-order thinking; and
- support the transfer of learning.

(Essential Learning Framework 1, 2002, p. 4)

1.1.2 Importance of Interpersonal Behaviour in Health Science

In my experience as a health science teacher, I have often had discussions with other health science teachers about how important our interpersonal behaviour with our students is and how important it is for our interpersonal behaviour with students to be positive.

One reason for this is that health science is a subject where students are on 'display' much of the time. That is not to say that other subjects do not put students on 'display'. For instance, in mathematics students are required to solve problems, writing answers on paper. In English students write essays on paper and may be asked to read a story or poem. In foreign languages students may be asked at times to present work orally. In most subjects, a typical, traditional classroom culture exists, where students sit behind desks and although sometimes they are required to be publicly accountable for their work, more often than not, it is possible for students to hide their failures or weaknesses from their friends and in some cases, from their teacher. This is not the case in health science, where every response and movement by a student is in full view of the class. If a student cannot throw a softball far, run fast or kick a soccer ball, the others see it. Their ability and talent cannot be hidden and comparisons between students become obvious.

The second reason that interpersonal behaviour between a teacher and his or her students is important is the nature of the health science curriculum. As a teacher, if I do not have good relationships with those in my class, how can I discuss topics of a personal nature such as sexual health? If my students and I do not have an understanding of each other and are not able to communicate at a positive and trusting level, then there is a diminished chance of students gaining knowledge, attitudes and values which may help them in the future. Past experience has led me

to believe that the better relationship I have with a class, the more relaxed I am when discussing issues of a personal nature. If I am more relaxed, the lessons seem to go better, there is more laughter and at the end of the lessons, the students and I have discussed more issues in greater depth than in classes where I do not feel I have good relationships with the students. I have also found similar situations in practical lessons. When I am taking a gymnastic unit, if I have a good relationship with a class and trust them, I will give them more opportunities. For example, they may be given up to five different apparatus to work on and would be given some choice in the actual skills they practice on the apparatus. If I do not have a good relationship with a class, then I would only give them two apparatus to work on, one being on the floor which has a low element of danger and the other on an apparatus which has a higher element of danger.

Although interpersonal behaviour between students and teachers is important in every subject taught in schools, it would appear that in health science classrooms, there is an extra degree of importance. First, without good relationships with their students, teachers may have to limit the opportunities available to students due to health and safety issues. Conversely, personal experience leads me to believe that good relationships with students often leads to greater and more interesting learning taking place within the classroom. Secondly, in health science, attention is focused on an integral part of the individual, which has a big impact on a student's self concept and self respect. This calls for tremendous sensitivity on the part of health science teachers. The nature of teacher attitudes towards the student and their interpersonal behaviour with students is very important (Whitehead, 1990).

1.2 THEORETICAL FRAMEWORK

Researchers have been investigating the impact of a teacher's character and their teaching style on students since the late 1890's. Since that time, there has been a recognised need to understand the basis of quality teaching (Smith, 1997). Over the last 100 years, many researchers have attempted to find answers to this dilemma. Some of the first studies were descriptive in nature and were concerned with the characteristics of an effective teacher (Barr & Emans, 1930; Charter & Waples,

1929; Hart, 1934; Kratz, 1896). Later on, researchers began to investigate the correlation between the behaviour of teachers and student outcomes (Bennett, 1976; Brophy, 1973; Medley, 1977, 1979; Rosenshine, 1970; Veldman & Brophy, 1974). More recent research by Fraser (1986, 1994) and Fraser and Walberg (1991) has established classroom environment research as a valid and justifiable field of study. Classroom environment research is now extensive, with studies ranging from constructivist classroom environments (Gibbons, 2003; Kim, Fisher, & Fraser, 1999; Taylor, Fraser, & White, 1994; Watts & Bentley 1987); to computer-assisted instruction classrooms (Chang, 2002; Wallace, 2002); to student and teacher interpersonal behaviour in the classroom (Koul & Fisher, 2003; Wubbels & Levy, 1993); and to associations between learning environments and teaching practices (Lopata, Miller, & Miller, 2003; Von Secker, 2002).

Underpinning many of the learning environment instruments developed in the last 30 years is the Theoretical Framework for Human Environments which was originally proposed by Moos (1974). In his research on human environments in hospital wards, school classrooms, prisons, university residences and military establishments, Moos (1979) proposed that there were three dimensions that characterise learning environments. These three dimensions are:

- *Personal Development dimensions* which assess personal growth and self-enhancement;
- *System Maintenance and System Change dimensions* which involve the extent to which the environment is orderly, clear in expectations, maintains control, and is responsive to change; and
- *Relationship dimensions* which identify the nature and intensity of personal relationships within the environment and assess the extent to which people are involved in the environment and support and help each other.

From his research, Moos developed the *Classroom Environment Scale* (CES) (Moos & Trickett, 1974) which examines the associations between student outcomes and student perceptions of the classroom's psychosocial environment.

Leary (1957) developed a two-dimensional model for measuring and representing specific relationship dimensions. Wubbels and Levy (1991, 1993) and Wubbels, Créton, Levy, and Hooymayers (1993) later adapted Leary's model into an eight sector model. From this work, an instrument was developed which allowed the examination of the interpersonal behaviour between teachers and their students (which according to Moos (1974) is a part of the relationship dimension) and was named the *Questionnaire on Teacher Interaction* (QTI). This study extends and builds upon the work previously undertaken in learning environments by using the Australian version of the QTI for the first time in a large study in the health science learning area.

When interacting with students, teacher behaviour has been found to have a large impact on the learning environment (Wubbels, Brekelmans, & Hermans, 1987). Fraser (1998a, 1998b) confirmed the contribution teachers make to the classroom environment. The interpersonal behaviour and communication style of a teacher has also been used as an indicator of teacher effectiveness (Brophy & Good, 1986). Walberg, (1986) and Fraser, Walberg, Welch, and Hattie (1987) also found that measurements of teacher effectiveness and student achievement are closely related to the quality of the classroom environment. Moos (1974) believed that a strong indicator of the learning environment is the nature of the communication between students and teachers. It is possible to ask teachers about their perceptions of their classrooms, however, previous research has shown that teacher perceptions usually differ from those of their students (Fraser, 1998a; Wubbels & Levy, 1993). Therefore, in the last 10 years, the perceptions of students have been used more widely to assess the quality of the classroom learning environment (Fraser, 1998a, 1998b; Fraser & Walberg, 1991). As demonstrated by Wubbels, Brekelmans, and Hermans (1987) one of the reasons for this is that student perceptions are related to their cognitive and affective performances. Therefore, one of the aims of this study was to investigate how students perceive teacher interpersonal behaviour and to compare the perceptions students and teachers have about this interpersonal behaviour.

Wubbels and Levy (1993) concluded that teacher interpersonal behaviour is an important aspect of the learning environment and is strongly related to student

attitudinal outcomes. Other research supports their conclusion that to improve student outcomes, teachers need to create learning environments which are high in characteristics such as helping, friendly, understanding and leadership behaviour, all of which have been found to be positively linked with student outcomes (Brekelmans, Wubbels, & Créton 1990; Fisher, Rickards, Chiew, & Wong, 1997; Henderson, Fisher, & Fraser, 1995; Koul & Fisher, 2003; She & Fisher, 2002; Wubbels, Brekelmans, & Hooymayers, 1991). Therefore, another aim of this study was to investigate student perceptions of teacher interpersonal behaviour as measured by the QTI that were positively associated with student outcomes. Student outcomes were measured in terms of attitudes by an Attitude Scale (see Appendix C). Student achievement in class was measured by their academic awards.

Previous research has also found that in general, female students perceive the behaviour of their teachers more favourably than male students (Fisher & Rickards, 1997; Khine & Fisher, 2003). Levy, Wubbels, and Brekelmans (1992) found that beginning teachers do not display as much dominant behaviour as experienced teachers. They found that students see beginning teachers as less sure of themselves compared to experienced teachers. Similar results have been found in other studies (Créton, Hermans, & Wubbels, 1990; Levy, Wubbels, & Brekelmans, 1992; Wubbels, Brekelmans, & Hermans, 1987; Wubbels, Créton, & Hooymayers, 1985, 1990; Wubbels, Levy, & Brekelmans, 1997). The final aims of this study were to investigate the differences in male and female student perceptions of health science teacher interpersonal behaviour and to investigate the differences in their perceptions of the interpersonal behaviour of experienced and less experienced teachers.

All of the studies mentioned above relate to mathematics or science subjects. There is no evidence in the published literature available that the QTI has been used in the health science learning area.

This research is therefore significant, as it is the first time the QTI has been used in a large study of health science students and the first time that associations between student and teacher interpersonal behaviour and student outcomes, sex differences and teaching experience have been investigated.

1.3 AIM AND RESEARCH QUESTIONS

1.3.1 Aim

The aim of this study was to investigate teacher interpersonal behaviour in health science classes by using the 48 item, Australian version of the QTI for the first time in grade 9 and grade 10 health science classes in Tasmania, Australia.

1.3.2 Research Questions

The QTI has not been used in health science classes before, although it has been proven to be reliable when used in a number of other subjects (Brekelmans, Wubbels, & Levy, 1993; Fisher, Henderson, & Fraser, 1995). In the past, the QTI has been used to investigate the perceptions of both students and teachers about their learning environment, as well as to identify typologies of teachers. QTI-based research has also focused on a number of different factors which may affect student and teacher interpersonal behaviour, these are: differences between student perceptions and teacher perceptions (Wubbels, Brekelmans, & Hermans, 1987; Wubbels, Brekelmans, & Hooymayers, 1993), student attitudinal outcomes (Fisher, Henderson, & Fraser, 1995; Wubbels, 1993), student cognitive outcomes (Brekelmans, Wubbels, & Créton, 1990; Haertel, Walberg, & Haertel, 1981), experience of teachers (Créton, Hermans, & Wubbels, 1990; Wubbels, Créton, & Hooymayers, 1985) and differences between male and female student perceptions of teacher interpersonal behaviour (Fisher & Rickards, 1997; Khine & Fisher, 2003). The results of this previous research involving the QTI as well as the need to validate it for use in health science classes led to 10 research questions.

1. Is the Questionnaire on Teacher Interaction (QTI) used in this study - in both its student and teacher self questionnaire form - a valid and reliable instrument for measuring perceptions of the interpersonal behaviour of health science teachers?

2. Is the Attitude Scale used in this study a valid and reliable instrument?

3. Which Australian QTI typology best represents health science teachers in Tasmanian schools?

4. What differences exist between health science student perceptions of teacher interpersonal behaviour and teacher perceptions of their own interpersonal behaviour?

5. Is there an association between student perceptions of teacher interpersonal behaviour and attitudinal outcomes of students in health science classes?

6. Is there an association between student perceptions of teacher interpersonal behaviour and cognitive outcomes of students in health science classes?

7. What associations exist between student perceptions of teacher interpersonal behaviour and teaching experience?

8. In health science classes do male and female student perceptions of teacher interpersonal behaviour differ?

9. Are the statistical results from the use of the QTI supported by student comments about teacher interpersonal behaviours?

10. How similar are the results from this study to the researcher's own experiences as a health science teacher?

This study provides an important link between health science and previous research undertaken in the area of learning environments when using the QTI.

1.4 OVERVIEW OF METHODOLOGY

The sample chosen for this study was grade 9 and grade 10 health science students, their teachers and the researcher. The classes were undertaking the new Tasmanian Qualification Authority (TQA) health science syllabuses in Tasmania, Australia. In selecting the sample, the three school sectors in Tasmania, the State Education Department System, the Catholic Education System and the Independent School Group were considered. The study involved 1,471 students, 751 females and 720 males, in grade 9 and grade 10, from 75 health science classes in 16 schools in Tasmania, Australia. Including the researcher, 38 teachers, 18 males and 20 females, took part in the study with teaching experiences ranging from first-year-out to 30 or more years.

Both quantitative and qualitative methods of research were combined in this study. The quantitative instruments were the 48-item version of the QTI and an Attitude Scale. The qualitative research was conducted through the use of focus group interviews and a reflective story from the researcher. The QTI was selected because it has been shown to be reliable in a number of different subjects areas and countries (Wubbels & Levy, 1991) but it has not been used in health science classrooms before. Student attitudes were assessed with an eight-item Attitude Scale, adapted from the *Test of Science-Related Attitudes* (TOSRA) (Fraser, 1981a). Student cognitive outcomes were recorded according to their TQA academic award. Focus group interviews were used to supplement data gathered through the use of the QTI and Attitude Scale. Finally, a reflective story combining the results from this study with personal experiences and reasoning from the researcher is presented, thus enabling a comparison to be made between the results from this study and the researcher's own experience as a health science teacher.

1.5 SIGNIFICANCE OF THE STUDY

A significant contribution of this study is its focus on secondary health science classrooms. There is an obvious lack of literature on classroom environments where secondary health science classrooms are concerned. This study expands upon the

current literature by examining the classroom environment of a large sample of health science students.

This study is significant because it provides health science teachers with a quick and convenient way to examine what is occurring in their classrooms. It also provides information as a starting point for their reflection on relationships with their students. Previous studies undertaken in a number of countries and in a variety of subjects have reported that teachers, after having completed the QTI themselves and with their classes, and having time to consider the results, have reflected on their teaching and their relationships with their students (Fisher, Rickards, & Fraser, 1996). One teacher in this study reported that just completing the QTI with her classes created "such good discussion" she now felt that she and her classes have more respect for each other, and relationships have improved tremendously with some individual students.

The QTI can give teachers information about how their students see them, how they see themselves and the 'ideal teacher' from both student or teacher perspectives. This information can be used to help identify areas of personal development for teachers. This may also lead to discussions on teaching behaviours and practices. Validating the QTI in health science classrooms should also encourage further research into the health science learning area.

In summary, this research contributes significantly to the study of teacher interpersonal behaviour by providing validation data for the QTI from a large number of health science classrooms in Tasmania. The unique aspect of this study is that it seeks to contribute to a better understanding of the health science learning area. It investigates teacher interpersonal behaviour in health science classes, by examining the typology which best represents Tasmanian health science teachers, and by looking at the difference between how students see teacher interpersonal behaviour and how teachers see their own interpersonal behaviour. This study also investigates the associations between teacher interpersonal behaviour, student attitudinal and cognitive outcomes, sex of students and experience of the teacher. It combines both quantitative and qualitative methods of research. Validation of the QTI in health science classrooms in Tasmania also provides teachers with the

opportunity to monitor and evaluate their classrooms through a practical means which can lead to reflection and a general improvement in the quality of teaching and learning.

1.6 OVERVIEW OF THE THESIS

Overall, this study is concerned with the use of the QTI in health science classes and the thesis consists of eight chapters and six appendices. Chapter 1 has introduced the background of this study and the rationale for it, as well as providing information about its significance and the research questions to which this study was aiming to provide answers.

Chapter 2 contains a review of the literature related to this study. It is divided into two major sections. The first section describes research into learning environments and interpersonal behaviour. It also describes the development of the Questionnaire on Teacher Interaction (QTI) and how this instrument can be used in research. The second focus of the review is the health science literature pertaining to this study.

Chapter 3 provides an outline of the objectives of this study and also describes the methodology utilised such as: sample selection, selection of the instruments, data collection, data analysis, and the combining of quantitative and qualitative data.

Research question 1 is the prime focus in Chapter 4: the validation of the QTI in health science classes. Research question 2, the reliability of the Attitude Scale is also investigated in Chapter 4. In this chapter, descriptive statistics are used to show that the QTI and Attitude Scale are valid instruments when used in health science classes.

The results discussed in Chapter 4 are expanded on in Chapter 5 where research questions 3, 4, 5, 6, 7, and 8 are investigated. Descriptive statistics are used to profile student and teacher perceptions of teacher interpersonal behaviour as well as the typology category which best represents health science teachers in Tasmania. The statistics are then used to explore the differences between how the students see

teacher interpersonal behaviour and how the teachers see themselves. This chapter also examines the associations between the QTI scales and student attitudinal and cognitive outcomes, as well as differences in student perceptions of teacher interpersonal behaviour in health science classes of experienced and less experienced teachers. Finally, the differences in male and female student perceptions of teacher interpersonal behaviour in health science classrooms are evaluated.

The findings discussed in Chapters 4 and 5 are supported in Chapter 6 through the reporting of the qualitative data collected from the focus group interviews. The focus group interviews provide interesting data that support the use of QTI in health science classrooms and provide valuable information pertaining to research question 9.

Research question 10 is explored in Chapter 7 which is a personal reflection from the researcher. It brings together the quantitative and qualitative results of this study with the personal experiences and professional reasoning of the researcher's experiences as a health science teacher.

Chapter 8, the final chapter, reports the major finding of this study along with the implications for health science teachers. It also notes the limitations of this current study as well as suggestions for further research.

1.7 SUMMARY

This chapter initially provides an insight into why teacher interpersonal behaviour is considered important in health science classrooms. With students on display when they take part in lessons and the personal nature of the curriculum, it is imperative that health science students and teachers have good relationships. This means that students are more likely to have confidence to take risks and participate in lessons to the best of their ability, resulting in positive experiences and improved achievement.

The next two sections of Chapter 1 provided the theoretical framework supporting this study along with a preliminary discussion concerning the background of the QTI

and its use in some studies, as well as the changes that have occurred in health science in Tasmania in recent years.

Chapter 1 also outlined the broad aim and research questions for this study along with an overview of the methodology used. Also presented is a discussion concerning the significance of this study, and finally an overview of the contents of each chapter contained in this thesis is included.

Chapter 2, the Literature Review, contains a detailed review of the theories and research underpinning this study. Initially, perspectives on general learning environments is explored. This is followed by a discussion of the research supporting the QTI as well as the development and implementation of the QTI in other studies. Finally, there is a review of the health science literature pertaining to this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, the theoretical framework for this study is outlined. The primary aim of this study was to use the QTI for the first time to examine teacher interpersonal behaviour in health science classrooms in Tasmania, Australia. Extending the primary aim further led to the secondary aims which were to investigate: the typology to which health science teachers belong; the differences in how students and teachers see teacher interpersonal behaviour; and the associations between teacher interpersonal behaviour and student cognitive and attitudinal outcomes. Differences between the experience of teachers, and how male and female students view teacher interpersonal behaviour were also investigated. The literature review reflects the information and knowledge pertaining to these aims.

The first section begins with a general review and historical account of learning environment literature. The second section discusses some of the theories behind the QTI, these are: the Systems Perspective on Classroom Communication, the Leary Model, and adaptations of the Leary Model.

The next seven sections contain an overview of the literature directly related to the QTI. This begins with a section describing the QTI, why it was developed, how it was developed, and how results from the use the QTI are analysed. This is followed by a section about sector profiles which demonstrates a graphic representation of the data analysed from the QTI results. The next section discusses the reliability and

validity of the QTI, specific studies involving the QTI, and the use of the QTI by teachers. It is followed by a literature review on various aspects regarding the QTI and other classroom factors, including: differences between how students and teachers see their relationships, students' attitudinal outcomes, student cognitive outcomes, experience of teachers and sex of students.

Literature involving the health science learning area is presented in four sections. The first section contains a discussion of general health science literature which relates to the learning environment literature discussed earlier in the chapter. The second section contains information regarding past research in health science which has used students' perceptions. The third section discusses student attitudes to health science followed by a section on the differences between how male and female students see their health science classrooms. The review indicates that there are no papers published describing the use of the QTI in the health science learning area.

The chapter concludes with a summary, drawing together learning environment literature and the health science literature.

2.2 LEARNING ENVIRONMENT PERSPECTIVE

As discussed in Section 1.2, the study of teachers and their impact on student learning has been taking place for over 100 years. Research by Moos (1974) led to a theoretical framework which forms a basis for a great deal of work with learning environment instruments developed in the last 30 years. When Lewin (1936) introduced the formula $B = f(P,E)$ to describe human behaviour (B), the foundation for learning environment research was laid. He believed that the combination of two independent influences, the person (P) and the environment (E) made up human behaviour. Lewin's theory was further developed by Murray (1938) who introduced the terms *alpha press* and *beta press* where *alpha press* describes the environment from the point of view of an external observer and *beta press* describes the environment from the point of view of someone involved in the experience. Stern, Stein, and Bloom (1956) extended this concept again to include perceptions of the environment by an individual, called *private beta press,* and *consensual beta press*

which was the perception of the environment shared by the group. Various measures of personality were developed from Murray's (1938) Need-Press Theory, however, environmental measures were rarely considered in early studies. Even when the study of human environments was being established, researchers recognised that different people bring different perspectives to research, which in turn may lead to different interpretations of results (Fraser, Fisher, & McRobbie, 1996).

In studying classroom environment, Fraser (1991) identified three common approaches: case studies, observation, and assessing student and teacher perceptions. Kuert (1979) supported this, stating that observation and self report questionnaires are the most popular research styles. Weinstein and Middlestadt (1979) also found that observed teaching behaviour was less critical than student perceptions in influencing student achievement.

Many researchers have shown that teacher behaviour, as seen by observers, influences student outcomes and attitudes (Bennett, 1976; Brophy & Good, 1986; Doyle, 1986). Researchers have also been interested in determining whether student perceptions of teacher behaviour correlate strongly with student outcomes. Scott (1975) emphasised the increasing importance of looking at the validity of students as evaluators. In fact, Walberg (1982) believed that student perceptions in learning environment research had been lacking up until the late 1960s. Fraser (1986) described a number of studies that found a high correlation between student perceptions of the classroom environment and their outcomes and attitudes.

Walberg (1968) developed the *Learning Environment Inventory (LEI)* to assess the learning environment in physics classrooms. At this time, Moos and Trickett (1974) were also developing an instrument, the Classroom Environment Scale (CES) to measure the learning environment. Both of these studies asked students for their perceptions of the whole class environment and formed the beginning of the new wave of classroom environment research. Further research using student and teacher perceptions of the classroom environment was undertaken by Fraser (1986), Burden and Fraser (1993), and Fraser and Walberg (1991). Wubbels, Brekelmans, and Hooymayers (1991) concluded that student perceptions of interpersonal teacher

behaviour was a better measure of the quality of a teacher's teaching than the teacher's own perceptions.

Moos' (1979) work, as discussed in Section 1.2, influenced the development and use of a number of instruments for assessing classroom learning environments from the perspective of students. Examples of classroom environment assessment instruments include:

- the *Constructivist Learning Environment Survey* (CLES) (Taylor, Fraser, & Fisher, 1997);
- the *My Class Inventory* (MCI) (Fraser, Anderson, & Walberg, 1982),
- the *Individualised Classroom Environment Questionnaire* (ICEQ) (Fraser, 1990);
- the *College and University Classroom Environment Inventory* (CUCEI) (Fraser, Treagust, & Dennis, 1986);
- the *Science Laboratory Environment Inventory* (SLEI) (McRobbie & Fraser, 1993);
- the Questionnaire on Teacher Interaction (QTI) (Wubbels & Levy, 1993); and
- the *Cultural Learning Environment Questionnaire* (CLEQ) (Waldrip & Fisher, 1998).

All of these studies have a commonality in their conceptual frameworks, in that the scales within each of the instruments can be categorised into one of Moos' dimensions, as described on page 7 of this thesis. However, nothing has been written for health science classrooms.

2.3 THE SYSTEMS PERSPECTIVE ON CLASSROOM COMMUNICATION

Learning environments and what makes them successful for students is frequently discussed by educators. Relationships and interpersonal behaviour, between individuals and groups, are seen as important not only by educational theorists, but by schools, parents and students. The General Systems Theory formed the basis of

past classroom research into interpersonal communication. This is exemplified in the work of Watzlawick, Beavin, and Jackson (1967) who discussed a number of important issues when considering communication. One of their underlying principles was based on the need for observation to be wide enough for the inquirer to include the context in which the phenomenon occurs. They were also concerned that people can make assumptions about what they see and can miss vital bits of information, which in fact may help explain behaviour. The following situation which the researcher has experienced illustrates this idea:

> During a gymnastic lesson, while a student is jumping on a trampoline, the teacher suddenly begins yelling at the student on the trampoline to get off it. An observer may well think that the teacher is acting irrationally and the need for the student to stop jumping is not urgent. If, however, the teacher has noted that the trampoline is not safe and a bit of the trampoline has come loose and the student is in imminent danger, then the teacher's reaction and urgency may be explained.

Watzlawick, Beavin, and Jackson (1967) explained "that if information is studied in isolation, the researcher is in fact really looking at the nature of the human mind. When, however, the researcher extends the inquiry to include effects of behaviour on others, their reaction to it, and the context in which all of this takes place, then the researcher begins to look at the relationships between people rather than isolated incidents" (p. 21). Further more, Watzlawick, Beavin, and Jackson (1967) stated that "communication is the vehicle through which relationships evolve and that from a pragmatic perspective, all behaviour, not only speech, is communication, and all communication affects behaviour" (p. 22). Thus the Systems Perspective of Communication evolved.

The systems perspective states that interaction is continuous and circular: that in groups, the behaviour of each person affects and is affected by the behaviour of each other person. Créton, Wubbels, and Hooymayers (1993) stated that unique to the System Perspective is the recognition that all parties contribute to the interaction and interpersonal behaviour does not exist in isolation. In the case of the classroom, the behaviour of the students and teachers mutually influence one another. The teacher's

behaviour is determined by the behaviour of the students and the behaviour of the student is determined by the teacher's behaviour. In this circle of communication, it is important to realise that event *a* does not necessarily precede event *b*, and *b* does not necessarily precede event *c* and so on. Due to the fact that the communication is circular in nature, event *b* may in fact precede event *a*. People will often perceive a beginning in an interaction pattern. This is due to people seeing interaction in a linear pattern rather than circular. Different people will want to break the circular pattern in different places. In the classroom, the teacher may feel that they have a problem with a student due to their continual talking whilst the student may say they talk because they do not see what the teacher is teaching them as relevant. Thus, two different people see two interconnected interactions in two different ways. The teacher says he or she is reacting to the student's behaviour while the student is reacting to the teacher's behaviour without realising that they are in fact influencing and reacting to each other.

The work of Watzlawick, Beavin, and Jackson (1967) was primarily based on family therapy, however, Doyle (1983) supported their work by relating it to the classroom. Doyle proposed that teacher interpersonal behaviour in the classroom is moulded by the need to secure student cooperation and is produced by teacher interpersonal behaviour. Teacher behaviour influences students, which are in turn influenced by the students, thus a circular pattern of communication takes place.

Past research using the systems perspective on classroom communication has focused on a number of important issues, some of these include: undesirable student behaviour in the classroom, which has been seen as either the result of poor teacher management or as a characteristic of students (Doyle, 1986); teachers who are likely to blame internal factors in the students as causes of 'problem students' (Brophy & Rohrkemper, 1981); student and teacher interaction patterns which are strongly stabilised in time (Au & Kawakami, 1984; Yinger, 1980); and teachers and students who are resistant to changes in established communication patterns (Blumfield & Meece, 1985).

Campbell (1974) also used the systems perspective when looking at the interaction between the same class and different teachers. He equated it to "a pack of hungry

half-starved wolves with the mathematics and English teacher but docile lambs with their science teacher" (p. 665). He indicated that student behaviour and teacher behaviour are intertwined and that since it is easier to change an individual rather than a group, the teacher is a good place to start when wanting to instigate change. A number of studies (Metz, 1978; Sanford & Everton, 1981; Sieber, 1979) found that teachers believe that disorder is caused by one or more students. These studies have shown that when the problem student is absent from the class, disorder in the classroom is less and the teacher feels considerable relief. Over time, however, other students will take the place of the original problem student and cause disorder. Teachers who have not had a chance to develop relationships with students - teachers new to a school or first-year-out teachers - can have relationships with students that are not specifically related to the subject area. This can happen during the early stages while students are 'trying out' teachers (Brooks, 1985).

Créton, Wubbels, and Hooymayers (1989) accepted the systems approach to behaviour and assumed that in communication, the behaviour of the teacher and students influenced each other mutually. In their study, they characterised disorderly situations as:

- Escalating Aggression (the teacher and students seize on each other's aggressive or confronting behaviour in order to be able to react even more aggressively or confronting.);
- Blaming Each Other (the teacher and student justify their own behaviour by pointing out the unreasonable behaviour of others.); and
- Troublesome Pupils (a small number of students disrupt the class regularly and test or push the teacher for a reaction).

(Créton, Wubbels, & Hooymayers, 1989, pp. 209-211)

Créton, Wubbels, and Hooymayers (1989) also suggested that teachers should be able to lessen the disorder by instigating change in their relationship with students. They noted four possible aspects of change:

- changing behaviour that promotes escalation;

- changing evasive behaviour;
- talking with disruptive students after lessons; and
- changing teaching methods.

(Créton, Wubbels, & Hooymayers, 1989, pp. 211-212)

Using the systems perspective on classroom communication, Wubbels, Créton, and Holvast (1988) described the characteristics of teacher-student communication using research from Watzlawick, Beavin, and Jackson (1967) as the basis for their discussions as follows:

- content and relationship aspect;
- not communicating;
- punctuation;
- symmetrical and complementary interaction;
- inconsistent communication/paradoxical injunction; and
- blindness, a form of symptomatic behaviour.

(Wubbels, Créton, & Holvast, 1988, pp. 28 - 37)

The application of the systems perspective to education by Wubbels, Créton, and Holvast (1988) has enabled teachers and educators to obtain a greater insight into classroom behaviour and interaction patterns. It has also made educators more aware of the need for teachers to adapt their behaviour in undesirable classroom situations, as it is easier to change the behaviour of an individual rather than a group of 25. Créton, Wubbels, and Hooymayers (1993) state that the systems perspective has enabled educators to analyse communication patterns in the classroom, and to take note of which communication patterns affect student behaviour in a positive or negative manner. They also believe that we should now be asking the question "Why does this student behave this way in my class?" rather than "Why does this student behave this way?" and to take the questioning one step further, "Which features of my teaching behaviour contribute to the student behaving this way?" (Créton, Wubbels, & Hooymayers, 1993, pp. 12).

Using the systems perspective on classroom communication, Créton, Wubbels, and Hooymayers (1993) argued that if a change is to be introduced into the classroom,

then the teacher should be the instrument of that change. They also argue that any change in the teacher could precipitate broader perceptions of change in the classroom. The systems perspective on classroom communication has been used in a number of studies, many of which have been mentioned above, however, it has not been used in the health science learning area. Due to the importance the health science curriculum places on communication, interaction and interpersonal behaviour, the systems perspective on classroom communication would appear to be a good supporting theory for this study.

2.4 THE LEARY MODEL

Leary (1957) undertook extensive research on interpersonal behaviour related to the area of clinical psychology. Much of his work was based on observations made of psychiatric patient interpersonal behaviour with other patients and with their doctors. Leary (1957) described interpersonal behaviour as "related overtly, consciously, ethically or symbolically to another human being (real, collective or imagined" (p. 4). He also believed that "personality theories should hold for adjustive and maladjustive behaviours" (p. 17). Wubbels, Créton, Levy, and Hooymayers (1993) state that Leary places personality at the heart of interpersonal behaviour. In fact, Leary himself indicated that he believes that interpersonal behaviour is the most important personality dimension from the standpoint of human survival (Leary, 1957).

Smith (1997) observed that the Leary Model identifies personality as the controlling factor in interpersonal behaviour and that people use communication for two main reasons. The first reason is to avoid anxiety and the second is to feel good about themselves. Therefore, when interacting, people either consciously or unconsciously choose behaviour to avoid anxiety and feel good about themselves; one person may take an aggressive and dominating approach in an interaction whereas another person may be quieter and more submissive. If people are successful over a period of time, then their behaviour will develop into patterns of interaction.

The Model depicted in Figure 2.1 was developed by Leary (1957) to allow interpersonal behaviour to be mapped on a coordinate system. The vertical axis represented dominance – submission while the horizontal axis represented hostility – affection. Leary (1957) believed that all interpersonal behaviour could be expressed in terms of his diagram and that behaviour is continually changing and evolving.

Further study and research led Leary (1957) to the "conclusion that a circular two-dimensional continuum of sixteen graphic variables represented the optimal degree of refinement of interpersonal themes" (p. 64). To gather data for his continuum, Leary was not interested in individual events or interactions but with sequences of interactions and patterns occurring over a period of time.

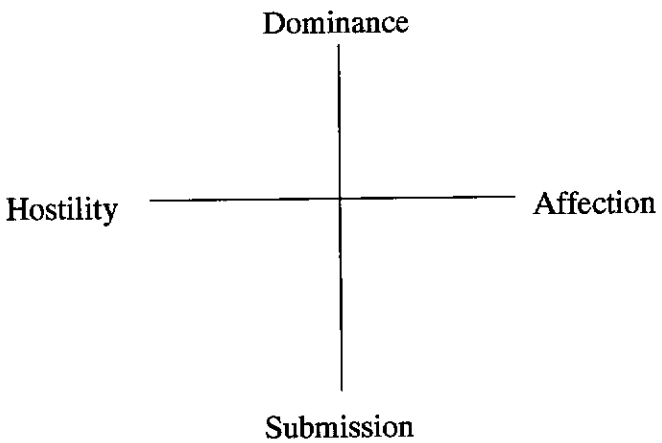


Figure 2.1. Leary's Model of Interpersonal Behaviour.

(Leary, 1957, p. 65)

2.4.1 Adaptation of the Leary Model

In an adaptation of Leary's model, Wubbels, Créton, Levy, and Hooymayers (1993) referred to the horizontal axis as opposition – cooperation and the vertical axis as dominance – submission. Wubbels, Créton, and Hooymayers (1990) named the dimension on the horizontal axis - Proximity and named the vertical axis - Influence (see Figure 2.2). Like Leary, they believed that interpersonal behaviour could be expressed as a combination of four points of reference. For instance, using Figure 2.2

as a guide: if a teacher is talking to the class about how to complete an assignment, then that teacher is demonstrating behaviour that is dominant and helping (A). Students who are listening would be submissive and cooperative (C). If, however, a student is doing something the teacher does not agree with and the teacher is admonishing and getting angry with the student, then the teacher is demonstrating dominant and oppositional behaviour (B). Finally, if a teacher 'gives in' to student demands then the teacher is demonstrating submissive and cooperative behaviour (C). If interaction (positive or negative) results from any of the situations above, then the behaviour of the teacher and student could change, causing them to display behaviour that could be dominant one moment and submissive the next.

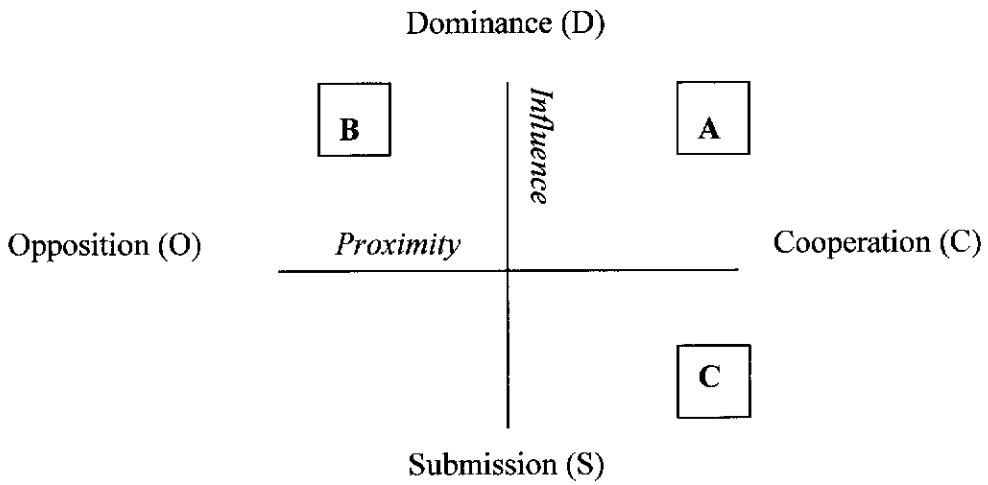


Figure 2.2. Adaptation of Leary's Model of Interpersonal Behaviour.
(Wubbels, Créton, Levy, & Hooymayers, 1993, p. 15)

Wubbels, Créton, and Hooymayers (1985) applied the Leary Model to the classroom by dividing Leary's original two dimensions into eight equal sectors to develop their Model for Interpersonal Teacher Behaviour (Figure 2.3). The eight behaviour components of the grid were adapted for use when mapping interpersonal teacher behaviour. The octants were given additional descriptors to make discussion more directed towards the behaviour characteristics of a teacher.

The Model for Interpersonal Teacher Behaviour enabled a teacher's interpersonal behaviour in the classroom to be mapped. Every instance of interactional teacher

behaviour can be placed within this system of axes. The closer the instances of behaviour are placed in the chart, the closer they resemble each other and the more similar are their effects on the students.

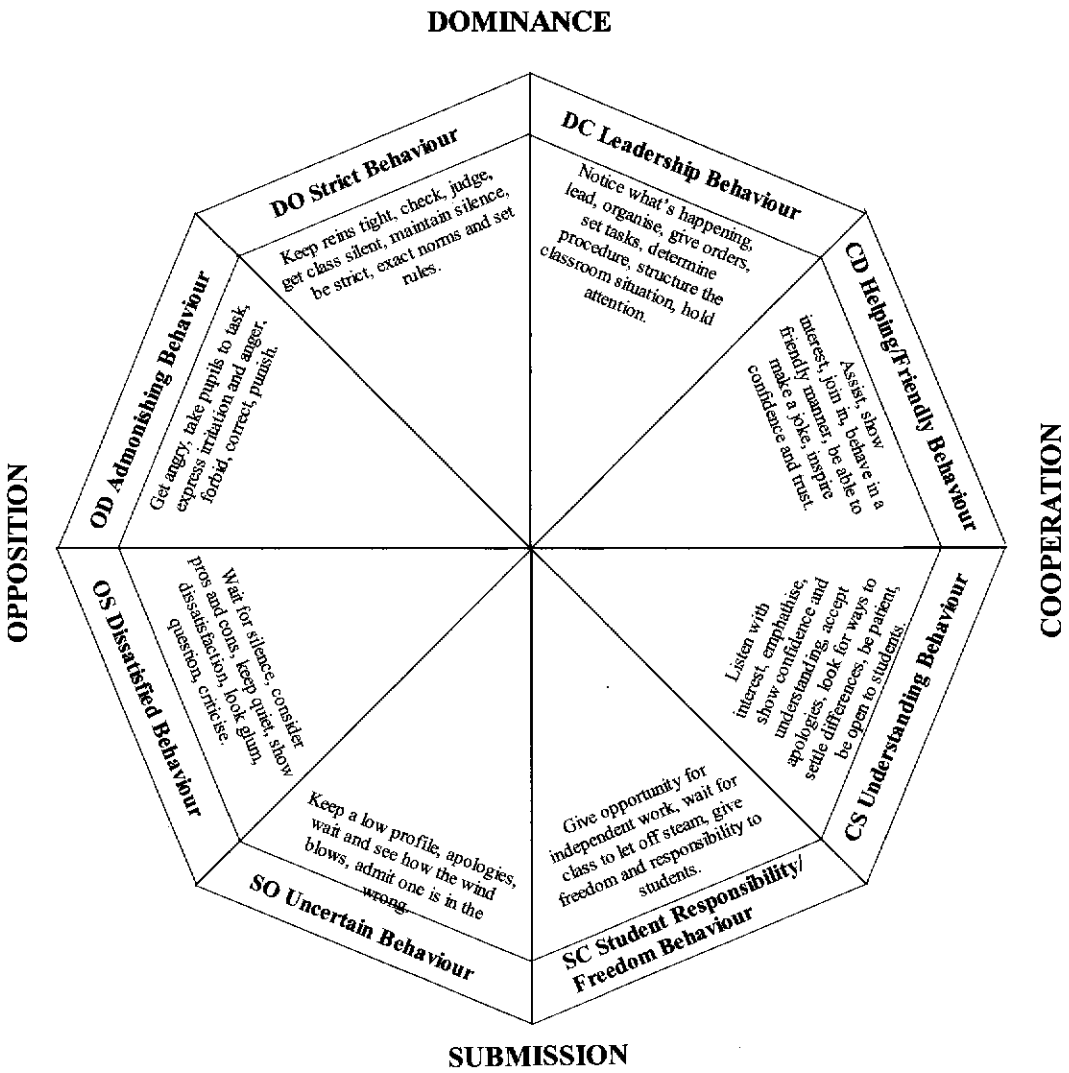


Figure 2.3. The Model for Interpersonal Teacher Behaviour.

(Wubbels, Créton, & Hooymayers, 1985, p. 66)

The sectors are labelled DO, OD, et cetera. according to their position on the coordinate system. For example, the sectors DO and OD both have characteristics of dominance and oppositional behaviour. In the DO sector, however, the behaviour is more dominant than oppositional. Whereas, in the OD sector, behaviour would be

more oppositional than dominant. This allows for the sectors of the model to have some overlap between neighbouring sectors so that a person could be described as a combination of two sectors. The eight sectors of the model were named with the following descriptive behavioural aspects: Leadership, Helping/Friendly, Understanding, Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict. Along with the name for each sector in the Model for Interpersonal Teacher Behaviour, a description of the types of behaviour that could be exhibited is included. For example, OD - Dissatisfied scale is explained as being: wait for silence, consider pros and cons, keep quiet, show dissatisfaction/look glum, question, criticise. Figure 2.3 shows typical behaviour for each sector. Opposite sectors indicate opposite behaviour, for example the Strict behaviour sector is opposite to the Student Responsibility/Freedom behaviour sector.

The model allows for the analysis of what the teacher does when he or she 'interacts with students' and the analysis of the effects of the teacher's actions on the students and on the patterns of the teacher's interpersonal behaviour (Wubbels, Créton, & Hooymayers, 1985). With the systems perspective in mind, the Model for Interpersonal Teacher Behaviour allows the measurement of interaction patterns, which emerge over time and after many interactions have occurred between the people involved. Wubbels, Créton, and Hooymayers (1985) believe that many interactions need to take place over a period of time so interaction patterns have an opportunity to develop and evolve. Through this, a true picture of a teacher's interpersonal behaviour can be observed.

2.5 THE QUESTIONNAIRE ON TEACHER INTERACTION (QTI)

The original version of the Questionnaire on Teacher Interaction (QTI) was in Dutch and was developed in the early 1980s by Wubbels, Créton, and Hooymayers (1985). It had eight scales, each consisting of nine to eleven items, with each item corresponding to one of the eight sectors of the Model for Interpersonal Teacher Behaviour. The items were answered on a five-point scale. In the late 1980s, Wubbels and Levy (1991) developed an American version of the QTI, consisting of

64 items and in the early 1990s, Fisher, Fraser, and Wubbels (1993) developed an Australian version that consists of 48 items. The QTI is not only available in Dutch and English, but has been translated into Hebrew, Russian, Slovenian, Swedish and Finish. The QTI has also been adapted into a *Primary Questionnaire on Teacher Interaction* and a *Principals Questionnaire on Interaction.* It is, however, the Australian version of the actual QTI (Appendix D) and the Teachers Self QTI (Appendix E), which are used in this study and discussed in greater detail in this thesis.

In the Australian version, there are eight scales, each scale consisting of six items and corresponding to each of the eight sectors of the model. The QTI questions were arranged in a cyclic order, enabling easier scoring of the test, for example, "Items 1 to 24 assess the four scales named Leadership, Understanding, Uncertain and Admonishing, whereas items 25 to 48 assess the four scales named Helping/Friendly, Student Responsibility/Freedom, Dissatisfied and Strict" (Wubbels, 1993, p. 2). The questions were also blocked, so that in the top half of the questionnaire, the first question of each block relates to leadership behaviour, the second question to understanding behaviour, the third to uncertain behaviour and the fourth to admonishing behaviour. In the second half of the questionnaire, the first question in each block relates to helpful/friendly behaviour, the second question to student responsibility/freedom behaviour, the third to dissatisfied behaviour and the fourth to strict behaviour. Table 2.1 gives typical examples of questions for each scale as well as the question numbers which relate to that scale.

Each item in the QTI is scored on a five-point Likert Scale, ranging from 0 (never) to 4 (always). Each completed questionnaire allows a score to be calculated for each sector of the model. For example, for the Leadership sector, the scores from questions 1, 5, 9, 13, 17, and 21 are added up. If this process is followed for all of the sector groups of questions, then a comparison between different sectors can be made.

Three versions of the QTI have been used in Australia. The first version, which was used in this study, is the Student Questionnaire (Appendix D), which enables students to indicate how they perceive teacher interpersonal behaviour. Table 2.1

provides the question numbers and a sample item for each QTI scale. The second version is the Teacher Self Questionnaire (Appendix E), which allows teachers to gain data on how they perceive their interpersonal behaviour in class. A third version the Ideal Teacher Questionnaire (Appendix F) enables teachers and students to develop a picture of how they perceive their ideal teacher. The two versions used in this study, the Student Questionnaire and Teacher Self Questionnaire are basically similar, but are adapted for their target audience. For example, item 1 in the Student Questionnaire is 'This teacher talks enthusiastically about her/his subject'. For the Teacher Self Questionnaire the item states 'I talk enthusiastically about my subject'.

Table 2.1
Question Numbers and Sample Items for Each Scale of the QTI

Names of Scale	*Question Numbers*	*Sample Item*
Leadership (DC)	1, 5, 9, 13, 17 & 21	This teacher talks enthusiastically about his/her subject.
Understanding (CS)	2, 6, 10, 14, 18 & 22	This teacher is willing to explain things again.
Uncertain (SO)	3, 7, 11, 15, 19 & 23	This teacher is hesitant.
Admonishing (OD)	4, 8, 12, 16, 20 & 24	This teacher gets angry unexpectedly.
Helpful/Friendly (CD)	25, 29, 33, 37, 41 & 45	This teacher helps us with our work.
Student Responsibility /Freedom (SC)	26, 30, 34, 38, 42 & 46	This teacher lets us get away with a lot in class.
Dissatisfied (OS)	27, 31, 35, 39, 43 & 47	This teacher thinks that we cheat.
Strict (DO)	28, 32, 36, 40, 44 & 48	This teacher is strict.

Brekelmans (1989) conducted a generalised study (Shavelson, Webb, & Burstein, 1986) to look at ideal conditions for the QTI to provide feedback to teachers. She

concluded that the QTI only needs to be administered once a year (since interpersonal teacher behaviour remains relatively stable after the first couple of weeks in the year), and at least 10 students in two different classes with the same teacher must complete the questionnaire for it to be considered reliable. The information gathered includes perceptions of the behaviour of the teacher towards the class as a whole, and reflects relatively stable patterns over time (Fisher, Rickards, & Fraser, 1996).

2.5.1 Sector Profiles

Once the QTI is completed, a set of eight scores can be obtained. These scores can then be plotted onto a sector profile as in Figure 2.4. The profile represents teacher communication or interpersonal behaviour as perceived by the students or by the teacher. Sector scores are usually converted to the mean of all items for that score and are between zero and four, where 'four' indicates that the behaviour in that scale is always demonstrated and 'zero' indicates that the behaviour in the scale is rarely, if ever, displayed. Once the mean responses for each scale from the QTI are calculated, then can then be plotted on a sector profile (Figure 2.4). There are six questions for each scale. For example, if the total of all responses for the Leadership Scale (DC) were added and totalled 19, then the mean score for that item would be:

$$\text{Leadership scale} = 19 \div 6 = 3.2$$

Similarly, if the total for all responses for the Admonishing scale were 11, then the mean score for that item would be:

$$\text{Admonishing scale} = 11 \div 6 = 1.83$$

For convenience in presentation, the results of the QTI in the sector profile are usually shaded in such a way that the larger the shade of the sector, the more students perceive that the teacher displays the corresponding behaviour.

When results from the QTI are graphed into a sector profile, they usually depict some level of behaviour in all of the sectors. Results between teachers may vary, as some teachers may have some sectors which rate higher and others lower. Figure 2.4 shows the interpersonal behaviour of a teacher who displayed a high level of interpersonal behaviour in the Leadership, Helping/Friendly and Understanding Scales, moderate interaction in the Scale of Student Responsibility/Freedom and low levels of interaction in the Uncertain, Dissatisfied, Admonishing and Strict Scales.

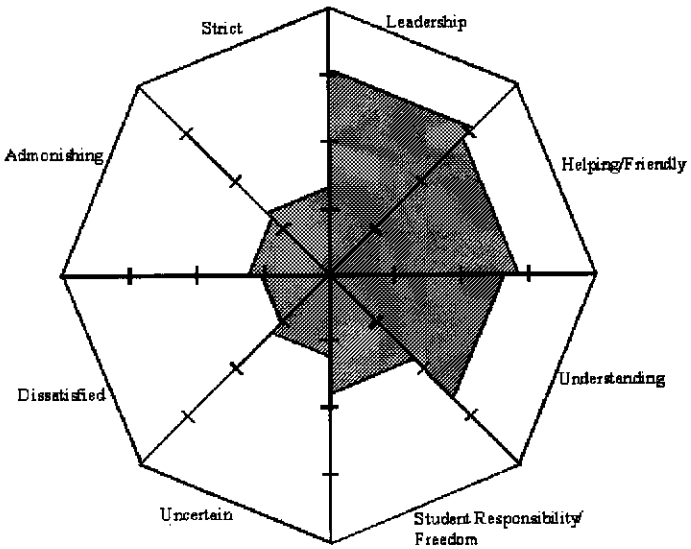
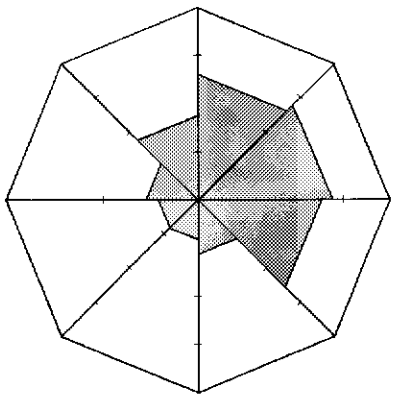


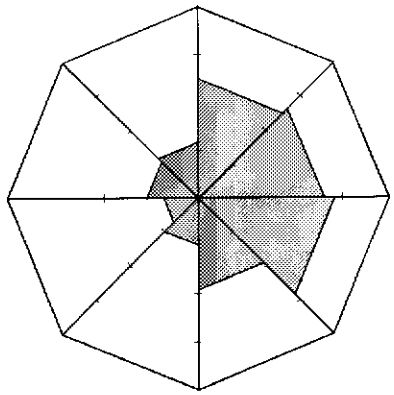
Figure 2.4. Example of a sector profile diagram used to map interpersonal behaviour.

Wubbels, Brekelmans, and Hooymayers (1991) gathered data from a number of studies of secondary school teachers (Fisher, Fraser, & Wubbels, 1993; Levy, Wubbels & Brekelmans, 1992; Wubbels, Brekelmans, & Hermans, 1987). They concluded that the average teacher profiles in a variety of subjects are fairly similar.

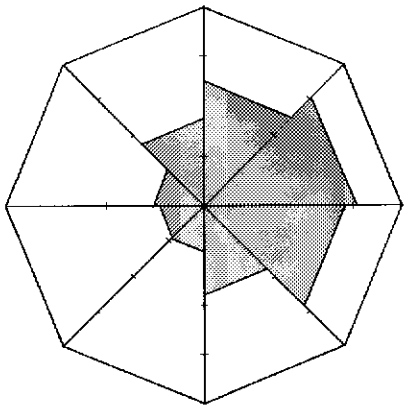
Figure 2.5 presents the average student perceptions for a sample of Australian science and mathematics teachers and American and Dutch teachers from a number of different learning areas. The students see their teachers demonstrating high degrees of leadership, strict, helpful/friendly and understanding behaviours and less in the uncertain, dissatisfied and admonishing behaviours.



Australian Students



Dutch Students



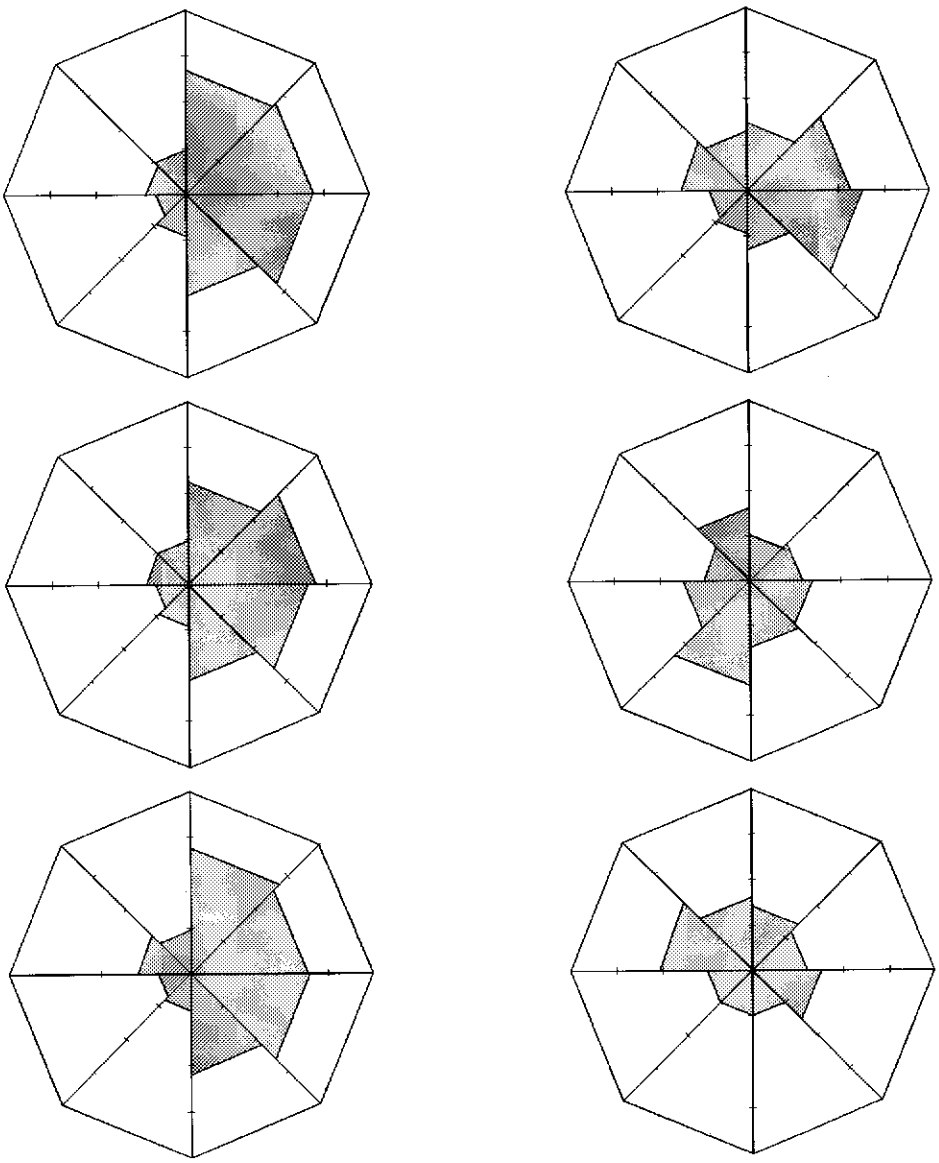
American Students

Figure 2.5. Average student perceptions of volunteer Australian (science and mathematics), American (variety of learning areas) and Dutch (variety of learning areas) teachers.

(Levy, Créton, & Wubbels, 1993, p. 30)

Créton and Wubbels (1984) found that there were some big differences between volunteer and random samples of teachers. They found that random samples of teachers showed less leadership, helpful/friendly and understanding behaviour than volunteer samples of teachers, and that students perceived the random sample of teachers to be less admonishing. They concluded that using volunteer teachers may provide an overly positive view of teachers in general.

Levy, Créton, and Wubbels (1993) also concluded that the perceptions of students in different classes of experienced teachers do not appear to differ much, however, the difference between profiles of different classes for beginning secondary teachers is more obvious. An example of this is shown in Figure 2.6 where the experienced teacher profiles for three classes are relatively similar whereas the profiles for a first-year-out teacher vary for different teachers.



Experienced Teacher First-year-out Teacher

Figure 2.6. Three classes of student perceptions of an experienced teacher and a first-year-out teacher.

(Levy, Créton, & Wubbels, 1993, p. 32)

Sector profiles can also be plotted from data gathered about comparisons of teacher perceptions of their interpersonal behaviour with student perceptions of teacher interpersonal behaviour, and comparisons of students' best teachers, worst teachers, ideal teachers and actual teachers (Wubbels & Levy, 1993) .

2.5.2 Typologies of Teachers' Interpersonal Behaviour

Brekelmans (1989) developed a typology of teachers' interpersonal behaviour based on student perceptions. This study was supported and confirmed by other studies (Levy, Rodriguez, & Wubbels, 1992; Wubbels, Brekelmans, & Hermans, 1987; Wubbels & Levy, 1991). From the data gathered, Brekelmans, Levy, and Rodriguez (1993) concluded that there are eight typologies which can be used to graph the communication style of teachers. The profiles of all teachers could be related to one of these eight typologies. The eight typologies developed by Wubbels, Brekelmans, and Hooymayers (1991) are described below, a graphical representation of the dominant characteristics of each type can be seen in Figure 2.7 and have also been plotted into sector profiles in Figure 2.8.

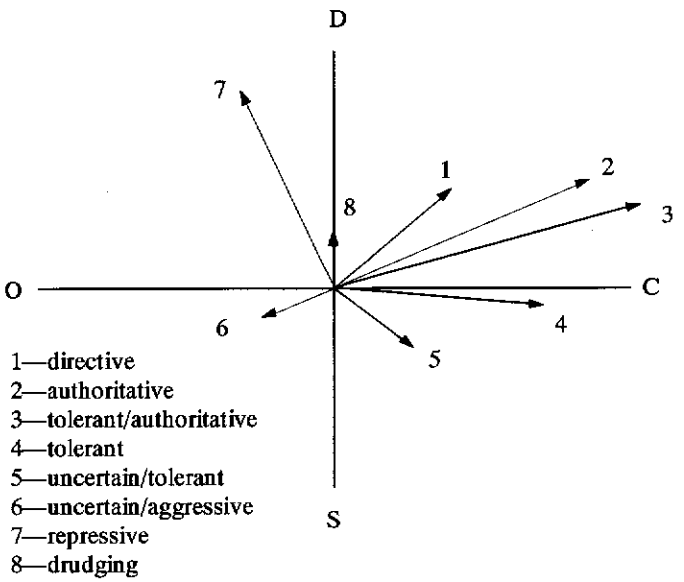
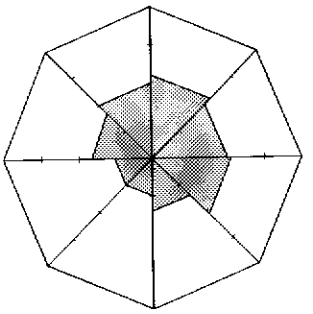
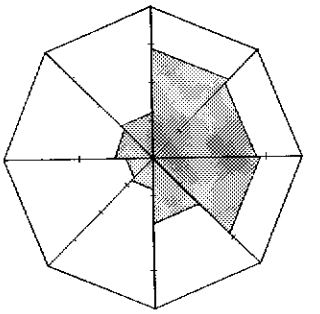


Figure 2.7. Main points of the eight types of the teacher communication style typology.

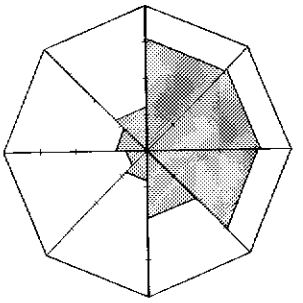
(Brekelmans, Levy, & Wubbels, 1993, p. 49)



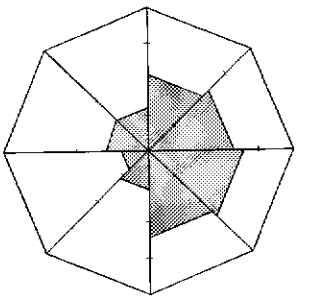
Type 1 Directive



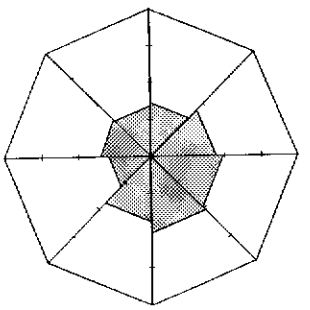
Type 2 Authoritative



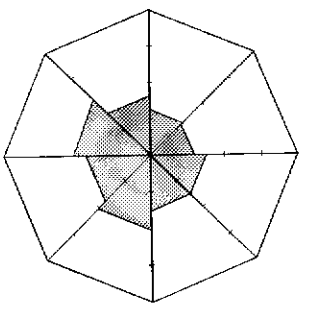
Type 3 Tolerant and authoritative



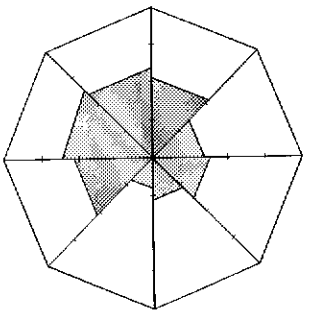
Type 4 Tolerant



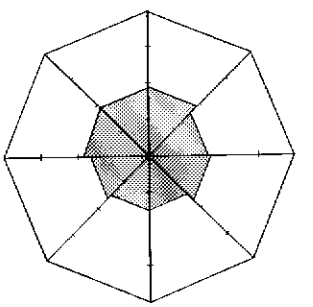
Type 5 Uncertain and tolerant



Type 6 Uncertain and aggressive



Type 7 Repressive



Type 8 Drudging

Figure 2.8. Mean profiles of the eight types of teacher communication style.
(Wubbels, Brekelmans & Hooymayers, 1991, p. 148)

Type 1: Directive

This classroom is well structured and task-orientated. The teacher seems not to be interested in the needs of the students or their desires, however the teacher can be understanding and friendly towards students on the odd occasion. The teacher tries to keep control of the class and is sometimes admonishing. The teacher can hold the students' attention, sets high standards and can be demanding. In discipline, the teacher corrects students' behaviour now and again, and students tend to follow the teacher's intervention (Brekelmans, Levy, & Rodriguez, 1993, p. 49).

Type 2: Authoritative

Like the directive type of teacher, the authoritive teacher's class is well structured and task-orientated. The classroom, however, has a pleasant atmosphere and is also achievement-orientated. Rules and procedures are clear, although the teacher sometimes has to remind students of the rules but this happens less often than with the directive type teacher. The teacher is aware of the needs and wishes of the students and takes a personal interest in them. The teacher is mainly an enthusiastic lecturer while using some other methods of teaching, and students listen with attention. The emphasis in class is on close relationships (Brekelmans, Levy, & Rodriguez, 1993, p. 50).

Type 3: Tolerant and Authoritative

The lessons of this teacher are fairly similar to the authoritive teacher, but with a large amount of structure and responsibility for students. This teacher has better relationships and understanding with the students, thus their cooperative behaviour is high and they enforce rules without being reminded. Due to the wide variety of teaching methods employed, students are highly motivated, feel supported and enjoy lessons (Brekelmans, Levy, & Rodriguez, 1993, p. 50).

Type 4: Tolerant

The tolerant teacher provides a pleasant and supportive atmosphere in their classroom. Students tend to have more freedom and are able to influence lesson procedures. The teacher is relatively flexible. Students are able to work at their own pace, and at the same time, the teacher makes sure the required content is covered. The teacher is also involved with students personally. Due to the nature of this teacher, the classroom can sometimes become disorderly (Brekelmans, Levy, & Rodriguez, 1993, p. 50).

Type 5: Uncertain/Tolerant

This teacher is highly cooperative without leadership. The teacher shows concern for students, is patient but task orientation is low and the classroom is unstructured. This leads to students lacking focus and commitment to completing set work. The teacher will often 'chalk and talk', and normally concentrates on a small number of student directly in front. The students and teacher appear to have reached an agreement: 'if you don't annoy me, I won't annoy you'. When the teacher does attempt to discipline students it is often half-hearted and unsuccessful. The disturbances in this classroom are less frequent and less intensive than the uncertain/aggressive type (Type 6 see below) (Brekelmans, Levy, & Rodriguez, 1993, p. 51).

Type 6: Uncertain/Aggressive

The Type 6 classroom has the 'me versus them' feeling. The students will try to disrupt the teacher as much as possible while the teacher's responses are often violent, arbitrary and panicky. In discipline, the teacher tends not to target the core discipline students but targets other students in the class. Students in these lessons often feel that it is the teacher who causes the disorder in the classroom. With an increasingly aggressive and noisy room, learning is often the last thing to be thought about. The teacher blames the students for the problems and is unlikely to make lessons interesting or attractive (Brekelmans, Levy, & Rodriguez, 1993, p. 51).

Type 7: Repressive

The teacher in this classroom is dominating. Rules are clearly set and expected to be obeyed. Students are quiet and docile due to being afraid of their teacher. The teacher's responses can be quick and aggressive, sarcastic and negative towards students. The atmosphere in the classroom is strained and unpleasant with students unable to show initiative or self thought. The teacher mainly uses chalk and talk or individual assignments while students sit quietly in their chairs. Help and support for students in need is non-existent (Brekelmans, Levy, & Rodriguez, 1993, p. 51).

Type 8: Drudging

The atmosphere in this classroom can vary from tolerant disorder (Type 5) to aggressive disorder (Type 6). Although discipline is evident, it is a constant struggle for the teacher who has to re-enforce rules and behaviour consistently. The teacher tends to teach in the same manner every day and rarely shows enthusiasm or support for students. This type of teacher can also appear to be uninterested, tired and burnt out (Wubbels, Brekelmans & Hooymayers, 1991, pp. 148 – 151).

The typologies enable teachers to gain more information than they would have from the sector profiles that are plotted with results. With this extra information teachers have a greater opportunity to reflect and if needed to try to change the way they relate to students.

While previous research on teacher typology has been validated for teachers in the Netherlands and the USA, it is only recently that the existing typologies proposed by Brekelmans, Levy, and Rodriguez (1993) have been investigated in regard to their validity for Australian science teachers. Den Brok, Rickards, and Fisher (2003) investigated the types of typologies which appear to be present in Australian science teachers as well as comparing these typologies with those from the Netherlands and the USA which were proposed by Brekelmans, Levy, and Rodriguez (1993).

Den Brok, Rickards, and Fisher (2003) found that more than 85% of Australian science teachers could be classified as being directive, authoritative, or tolerant/authoritive, while there were very few uncertain/tolerant, uncertain/aggressive or repressive teachers in their study.

Table 2.2 shows the frequency distribution and mean scores for both the Brekelmans, Levy, and Rodriguez (1993) study as well as the den Brok, Rickards, and Fisher (2003) study using the typologies presented by Brekelmans, Levy, and Rodriguez (1993). It can be seen that when comparing percentages between the two studies, it appears that the Australian sample has more teachers who are authoritative and tolerant/authoritative, while the Dutch/USA sample contained more teachers who were tolerant, uncertain/tolerant and uncertain/aggressive.

Table 2.2
Frequency of Occurrence for Existing Typologies of Teachers

Original Typologies of teachers	Frequency (Australian Sample)	Percentage (Australian Sample)	Percentage in Brekelmans, Levy, and Rodriguez (1993) study
Directive	44	15.5	18.2
Authoritative	106	37.5	14.9
Tolerant/Authoritative	96	33.9	10.4
Tolerant	17	6.0	23.5
Uncertain/Tolerant	4	1.4	15.3
Uncertain/Aggressive	3	1.1	6.5
Repressive	2	0.7	3.2
Drudging	11	3.9	0.3

(den Brok, Rickards, & Fisher, 2003, p. 12)

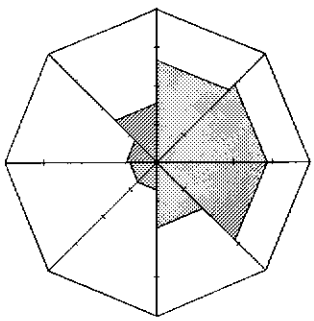
Results from the study completed by den Brok, Rickards, and Fisher (2003) suggest that typologies for Australian science teachers can be classified into seven distinct interpersonal patterns that are relatively stable. Four out of the seven typologies in the Australian sample resembled typologies from the Brekelmans, Levy, and

Rodriguez (1993) study. In the Australian study, these were labelled Tolerant/Authoritative (Type 1), Authoritative (Type 2), Directive (Type 4), and Uncertain/Aggressive (Type 4).

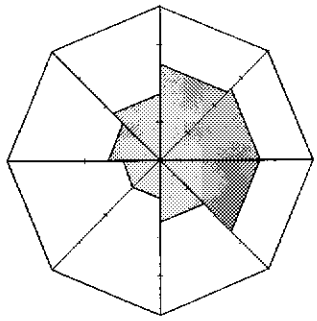
One Australian typology appeared to be a combination of two typologies from the Brekelmans, Levy, and Rodriguez (1993) study and was labelled Directive/Authoritative (Type 3). The Australian directive/authoritative teacher displays similar amounts of leadership, helping/friendly, and understanding behaviour as the authoritative and tolerant/authoritative teachers, but also displays a high amount of strictness and a small amount of student responsibility/freedom, admonishing, dissatisfied, and uncertain behaviour.

The final two typologies appeared to be unique to the Australian sample and were characterised by high levels of helping/friendly and understanding behaviours, and moderate to high levels of leadership and student responsibility/freedom behaviour. Teachers in both of these new typologies display leadership as well as allowing student responsibility/freedom when required. The teacher labelled as Flexible (Type 6) in the Australian study resembled the tolerant teacher from the Dutch/USA study but displays more leadership, while the Type 5 teacher was labelled as cooperative (supportive) and resembled the tolerant teacher from the Dutch/USA study, but displays less student responsibility/freedom.

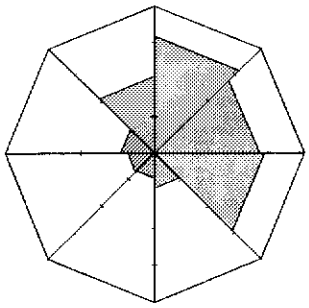
Generally in all cases, den Brok, Rickards, and Fisher (2003) found that Australian science teachers displayed less uncertainty than did the teachers involved in the Dutch/USA sample. Graphic representation of the seven types of teacher communication style which den Brok, Rickards, and Fisher (2003) found can be seen in Figure 2.9.



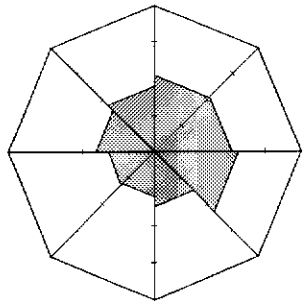
Type 1 – Tolerant/Authoritative



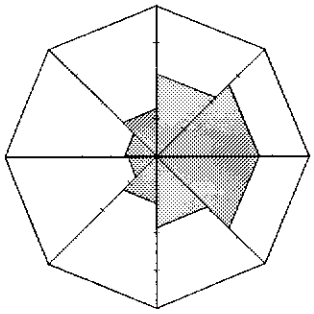
Type 2 – Authoritative



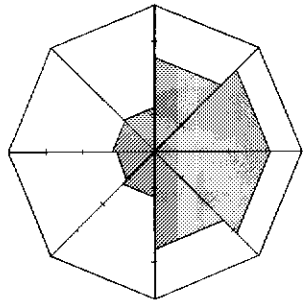
Type 3 – Directive/Authoritative



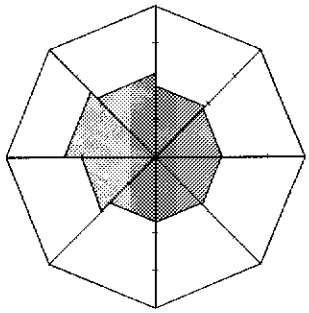
Type 4 – Directive



Type 5 – Cooperative (Supportive)



Type 6 – Flexible



Type 7 – Uncertain/Aggressive

Figure 2.9. Mean profiles of the seven types of teacher communication style in terms of the eight QTI scales for Australian science teachers.

(den Brok, Rickards, & Fisher, 2003, p. 15)

2.5.3. Reliability and Validity of the QTI

Several studies have been carried out with the aim of demonstrating the reliability and validity of the QTI. These include:

- Dutch samples (Brekelmans, 1989; Wubbels, Brekelmans, & Hermans, 1987; Wubbels, Créton, & Hooymayers, 1985);
- American samples (Wubbels & Levy, 1989);
- Singaporean samples (Fisher, Rickards, Goh, & Wong, 1997; Goh & Fraser, 1996);
- Australian samples (Fisher, Henderson, & Fraser, 1995; Wubbels, 1993);
- Brunei sample (Khine & Fisher, 2003);
- Taiwanese sample (She & Fisher, 2002);
- Korean sample (Lee, Fraser, & Fisher, 2003);
- Mauritian sample (Bessoondyal & Fisher, 2003);
- Israeli sample (Kremer-Hayon & Wubbels, 1992); and an
- Indian sample (Koul & Fisher, 2003).

In studies carried out in the Netherlands, Brekelmans (1989) found a mean alpha reliability of 0.90 for 206 classes. When the 64-item version of the QTI was used in the USA, Wubbels & Levy (1991) reported that the cross-cultural validity and usefulness of the QTI were confirmed. When using the Cronbach Alpha Coefficient, they found acceptable internal consistency reliabilities which were between 0.76 and 0.84 for students and from 0.74 to 0.84 for teacher perceptions of their own behaviour. Wubbels (1993) reported on the use of the QTI in Australia with a sample of 792 grade 11 students and their 46 teachers. The Cronbach Alpha Coefficients for the QTI scales ranged from 0.80 to 0.95 for students and from 0.60 to 0.82 for teachers. Goh & Fraser (1996) completed a study in Singapore, and reported that the Cronbach Alpha Coefficient ranged from 0.73 to 0.96 for students. Finally, in a study conducted in Tasmania with 1,883 students and their 108 teachers, Fisher, Kent, and Fraser (1998) found Cronbach Alpha Coefficients ranging from 0.66 to 0.83 using individual students as the unit of analysis, and from 0.83 to 0.93

when using the class as the unit of analysis. Table 2.3 shows the Internal consistency (Cronbach Alpha Coefficient) for students and teachers in three studies.

Table 2.3
Internal Consistency (Cronbach Alpha Coefficient) for the QTI

	Alpha Reliability					
	Students			Teachers		
	USA	Australia	The Netherlands	USA	Australia	The Netherlands
DC Leadership	0.80	0.83	0.83	0.75	0.74	0.81
CD Helpful/Friendly	0.88	0.85	0.90	0.74	0.82	0.78
CS Understanding	0.88	0.82	0.90	0.76	0.78	0.83
SC Student Responsibility/Freedom	0.76	0.68	0.74	0.82	0.60	0.72
SO Uncertain	0.79	0.78	0.79	0.79	0.78	0.83
OS Dissatisfied	0.83	0.78	0.86	0.75	0.62	0.83
OD Admonishing	0.84	0.80	0.81	0.81	0.67	0.71
DO Strict	0.80	0.72	0.78	0.84	0.78	0.61
Sample Size	1606	792	1105	66	46	66

(USA results from Wubbels and Levy, 1993, Australian results from Wubbels, 1993, and Dutch results from Wubbels, 1993).

In all of these studies, the internal consistencies are higher than 0.60, which is the acceptable level for questionnaires like this for research purposes (Nunnally, 1967). The QTI is therefore a reliable instrument for giving teachers and researchers feedback about their interpersonal behaviour. To support this, Wubbels, Brekelmans, and Hooymayers (1991) found that test-retest reliabilities were also above 0.80.

In order to be a valid instrument, the QTI should be able to distinguish between classes on the basis of an analysis of intra-class correlations and structural analysis involving correlation between scales (Wubbels, Brekelmans, & Hooymayers, 1991). Wubbels, Créton, and Hooymayers (1985) found that 48% to 62% of the total

variance in the subscales scores is accounted for by the effects of the teacher. Thus they thus concluded that the QTI is a useful instrument for demonstrating the differences in the behaviour of teachers (Wubbels, Créton, & Hooymayers, 1985).

In order to verify the QTI's validity, Horst's (1949) General Coefficient was calculated to obtain intra-class correlation. "This coefficient is large if the difference between classes is larger than the difference between students from one class" (Wubbels, Créton, Levy, & Hooymayers, 1993, p. 21). Wubbels, Créton, Brekelmans, and Hooymayers (1987) concluded that the intra-class correlations for the QTI were above 0.80 for every scale. Brekelmans (1989) also found the intra-class correlations were above 0.80 for every scale, leading to the conclusion that the differences in student perceptions were due more to class differences than individual student differences.

Fisher and Rickards (2000) used ANOVA and *eta*^{2} to examine the ability of the QTI to differentiate between the perceptions of different classes. When class membership was used as the main effect, it was found that each QTI scale differentiated significantly ($p<.001$) between classes and that the *eta*^{2} statistic ranged from 0.22 to 0.35 for different scales. Fisher, Rickards, Chiew, and Wong (1997) found similar results with the *eta*^{2} statistic ranging from 0.13 to 0.52 for different classes in Singapore and from 0.15 to 0.40 in Australia.

According to the Model for Interpersonal Behaviour, scales of the QTI are arranged in a circular pattern or as a circumplex model. There is an overlap between scales and the correlation of each scale should be highest with the scale next to it in the model and should become lower as scales move further away with the opposite scale having the lowest correlation. Results supporting this have been found by Goh and Fraser (1996), Scott and Fisher (2000) and Khine and Fisher (2003).

2.5.4 Specific Studies Involving the Use of the QTI

Some of the studies that previously used the QTI have already been mentioned in this chapter. There are, however, many other studies that have used the QTI in various contexts and some of these have included:

- the use of the QTI with other instruments;
- the use of the QTI in different countries; and
- adaptations of the QTI into a primary version and a principal's version.

Some of these studies are now discussed in more detail.

A study using the QTI was completed by Fisher and Rickards (1998). In this study, they used the 48-item version and collected data from 720 students in 20 grade 8 and grade 9 science classes in Singapore, 705 students in 29 grade 8 and grade 9 science classes in Australia and 728 students in 33 grade 9 classes in the USA. Fisher and Rickards (1998) found that the alpha reliability figures for the different QTI scales ranged from 0.60 to 0.98 in Singapore, from 0.64 to 0.96 in Australia and from 0.68 to 0.97 in the USA when the class mean was used as the unit of analysis. They found that in the Student Responsibility/Freedom scale, reliability figures were less than for the other scales, especially in Singapore. They concluded that the Student Responsibility/Freedom scale would need some revision before the QTI was used in Singapore.

From their study, Fisher & Rickards (1998) confirmed the reliability and validity of the QTI for use in science classes in Australia, Singapore and the USA. As discussed previously, the QTI has also been used in a number of other countries. The importance of these studies lies in the opportunities they provide to educators for comparing and exploring teacher interpersonal behavioural patterns between countries. Through such comparisons, educators should be able to gain a better insight into the attitudes, beliefs and practices of other countries, thus leading to

more international discussion and debate and, hopefully, better education for students.

The QTI has also been used to identify better or exemplary teachers (Tobin & Fraser, 1988; Waldrip & Fisher, 2003; Waldrip, Fisher, & Churach, 2003). These studies identified exemplary teachers as teachers whose students' perceptions were more than one standard deviation above the mean on the Leadership, Helping/Friendly and Understanding scales, and more than one standard deviation below the mean on the Uncertain, Dissatisfied and Admonishing scales. These researchers intended to identify and describe exemplary science teachers through teacher interpersonal behaviour, providing the teachers with opportunities for feedback and reflection.

Initial research into school level environment and teacher interpersonal behaviour was undertaken by Fisher, Fraser, Wubbels, and Brekelmans (1993). This research used the *School Level Environment Questionnaire* (SLEQ) and the QTI for the first time in Australia. Using these two instruments, the relationship between the perceptions of school level environment and classroom environment were examined. Due to the weak correlations of data, it was concluded that a teacher's behaviour in class is not influenced by his or her perceptions of the school environment, suggesting that teachers believe that they have freedom to shape their classroom as they wish, regardless of the school environment.

Using the Science Laboratory Environment Inventory (SLEI) and the QTI in senior biology classes, Henderson, Fisher, and Fraser (2000) investigated the association between student perceptions of teacher interpersonal behaviour, their laboratory learning environments and student outcomes. Results of the study found that the SLEI and the QTI were complementary when associated with student outcomes, and that by using both instruments, teachers will gain a better picture of aspects of the learning environment, which may increase student attitude and achievement outcomes.

Kent and Fisher (1997) investigated the relationship between student and teacher perceptions of teacher interpersonal behaviour and teacher personality. This involved the use of the QTI and the *Myers-Briggs Type Interaction* (MBTI). The

study found that there was some association between teacher personality and interpersonal behaviour and that a greater positive association between teacher personality and self perception was found than between teacher personality and student perceptions of teacher interpersonal behaviour. Student perceptions of teacher interpersonal behaviour is related to the personality of the teacher in the "freedom and responsibility they are allowed, whereas teachers associated their personality with self images of being friendly, helpful and allowing students to be independent, responsible learners" (Fisher, Kent, & Fraser, 1998, p. 114).

Studies have also been conducted looking at cultural factors in student perceptions of teacher interpersonal behaviour. Levy, Wubbels, Brekelmans, and Morganfield (1997) concluded that the ethnic background of students and teachers had a small but significant impact on student perceptions of their teachers, and that teachers do not seem to be aware of the cultural differences in their interactions with students in the same way their students did. Den Brok, Levy, Rodriguez, & Wubbels (2002) and Fisher & Rickards (1997) found similar findings as discussed before.

Another use of the QTI has been by van Tartwijk, Brekelmans, Wubbels, Fisher, and Fraser (1998). They combined the use of the QTI with judges' ratings of interpersonal behaviour. They found that student perceptions of teacher interpersonal behaviour related closely with the judges' perceptions when the teacher was teaching in front of the class, and that correlation between the two was low when students were involved in individual seat work. They concluded that student perceptions of teacher interpersonal behaviour are formed when the teacher is in front of the classroom and this creates the classroom environment that continues when the teacher is not in front of the class.

Teacher communication has been associated with a number of other factors involved with learning environments and student outcomes. Coulson and Killen (1996) investigated the relationship between teacher clarity and teacher communication styles using the QTI and the *Learner Questionnaire* (LQ) with 636 students from grades 10 to 12 in Queensland, Australia. They found that in the scope of their study there was significant correlation between several dimensions of teacher clarity and teacher communication style, and that leadership behaviour (DC) and understanding

behaviour (CS) account for a large proportion of the overlap between the two. These findings re-enforce the importance of understanding how student outcomes can be affected by teachers as a whole.

The QTI has been adapted for use in a primary school setting by Goh and Fraser (1996). Their revised questionnaire was administered to 1,512 students in 39 grade five classes in Singapore and each scale showed satisfactory internal consistency reliability and validity when using the individual student and class means as the units of analysis. Girls consistently rated teacher interpersonal behaviour more favourably than the boys. Llatov, Shamai, Hertz-Lazarovitz, and Mayer-Young (1998) also found that teachers talked more with females than with males during academic instruction.

She and Fisher (1997) used some scales of the QTI (Understanding, Helping/Friendly and Strict) as well as scales from other instruments and developed the *Teacher-Student Interaction* (TSI) questionnaire. The TSI was designed so that it could be used in science classes in both Taiwan and Australia.

Another adaptation of the QTI was into a Principal's Interaction Questionnaire (PIQ), first done by Kremer-Hayon and Wubbels (1993). The adaptation involved changing some of the scales (for example, Student Responsibility/Freedom became Giving Teacher Responsibility/Freedom, the Admonishing scale became Objecting). Cresswell and Fisher (1996) used a similar procedure as Kremer-Hayon and Wubbels (1993) and developed a 48-item version of the PIQ. When combining the PIQ with the SLEQ, Cresswell and Fisher (1996) found that a Principal's interpersonal behaviour with teachers had significant correlations with teacher perceptions of the school environment. Uncertain, admonishing and dissatisfied behaviours by principals had negative effects on how teachers saw the school environment while the Principal's leadership and giving of responsibility and freedom to teachers had the greatest effect on the teachers' assessment of the environment.

2.5.5 Use of the QTI by Teachers

Results from the QTI can be used by teachers as a basis for self reflection. Teachers have found it easy to use. They find the feedback it provides to be reliable, and that it is a good gauge of the quality of the atmosphere in the class and of how well they communicate with their students. By using the data provided by the sector profile, teachers can reflect on their classroom interpersonal behaviour and use the results as a guide for modifying their behaviour with students (Fisher, Rickards, & Fraser, 1996).

Teachers have reported that receiving results from the QTI caused them to reflect more on their teaching and on how they interact with students. In fact, one teacher stated that she had become more aware of the need for clear communication with her students and subsequently, she made this a focus for improvement (Fisher, Rickards, & Fraser, 1996).

The picture given to teachers through the use of the actual and ideal versions of the QTI can be of great benefit. For instance, comparing student perceptions of their actual environment with their ideal environment gives teachers the chance to modify their interactional behaviour to match the actual environment more closely with the ideal. Henderson, Fisher, and Fraser (2000) believe that if this could happen, then student outcomes will be enhanced.

A study by Mellor and Moore (2003) investigated whether the QTI could be used to measure student perceptions of teachers in general rather than a specific teacher. They found that the QTI can do this and suggested that further study into the perceptions of different students in high school could be investigated in order to compare teacher interpersonal behaviours across subjects taught and student performances in those subjects.

2.5.6 Comparison of Student and Teacher Perceptions of Health Science Teacher Interpersonal Behaviour

The three versions of the QTI allow comparison of a number of different sets of data, student perceptions of teacher interpersonal behaviour, teacher perceptions of their behaviour, and student and teacher ideals of best and worst teachers. The relationship between student perceptions and teacher perceptions have been studied by Brekelmans & Wubbels (1992), Brekelmans, Wubbels, & Hooymayers (1988), and Wubbels, Brekelmans, & Hermans (1987). Wubbels, Brekelmans, and Hooymayers (1987) found that students and their teachers agreed least about a teacher's understanding and helping/friendly behaviour and most about a teacher's strict and leadership behaviour.

Wubbels, Brekelmans, and Hooymayers (1987) also found that there is a difference between teacher and student perceptions of teacher interpersonal behaviour. Teachers tend to see their learning environment more favourably than students on the scales that are related to positive affective and cognitive outcomes for students. When teachers completed the Ideal Teacher Questionnaire, Brekelmans, Wubbels, and Hooymayers (1988) found that teacher perceptions of their behaviour were normally between their ideal behaviour and student perceptions of that behaviour. Wubbels, Brekelmans, and Hooymayers (1991) concluded that student perceptions of a teacher's interpersonal behaviour is a better measure of the quality of a teacher's teaching than teacher perceptions are.

2.5.7 Associations Between Student Perceptions of Teacher Interpersonal Behaviour and Student Attitudinal and Cognitive Outcomes

Further use of the QTI enabled some researchers (Brekelmans, Wubbels & Créton, 1990; Brekelmans, Wubbels, & Levy, 1993; Fisher, Henderson, & Fraser, 1995; Wubbels, 1993; Haertel, Walberg, & Haertel, 1981; Wubbels, Brekelmans, & Hermans, 1987) to show a relationship between teacher interpersonal behaviour and student affective and cognitive outcomes. These studies involved physics teachers, biology teachers and other science teachers. They reached the conclusion that there

was a high correlation between student perceptions of teacher interpersonal behaviour and affective outcomes, and a significant correlation between student perceptions of teacher interpersonal behaviour and cognitive outcomes.

Teachers whose interpersonal behaviour was predominantly mapped to the right of the dominance/submission axis on the model for interpersonal behaviour were shown to have greater affective outcomes in their classes. Thus, higher cooperation by the teacher leads to increased affective outcomes. In contrast, opposition by the teacher led to lower affective outcomes (Wubbels, 1993). However, when it comes to cognitive outcomes, it appears the dominance/submission scales of the model are important. The demonstration of the scales of Strict, Leadership and Helping/Friendly are positively related to student cognitive outcomes and the three submission scales of Student Responsibility/Freedom, Uncertain and Dissatisfied are negatively related to achievement.

These results can cause conflict in some teachers. For example, high cooperation by the teacher leads to increased affective outcomes whereas it appears the dominance/submission scales of the model are important for cognitive outcomes. So a teacher who shows high levels of strict or leadership behaviour may have the highest cognitive outcomes, but lower attitudinal outcomes. It would appear that if teachers want students to achieve high standards and have positive attitudes, then the teacher needs to demonstrate behaviour that is dominant and cooperative.

2.5.8 Associations Between Student Perceptions of Teacher Interpersonal Behaviour and Teaching Experience

Teacher training programs and their ongoing professional development are considered important aspects of maintaining and improving teaching standards. In the past, the QTI has been used to investigate any differences in the interpersonal behaviour of experienced and less experienced teachers (Créton, Hermans, & Wubbels, 1990; Levy, Wubbels, & Brekelmans, 1992; Wubbels, Brekelmans, & Hermans, 1987; Wubbels, Créton, & Hooymayers, 1985, 1990; Wubbels, Levy, & Brekelmans, 1997). Levy, Wubbels, and Brekelmans (1992) found that beginning

teachers do not display enough leadership behaviour, with students seeing them as less sure of themselves when compared to experienced teachers. Their conclusions supported other research in this area (Veenman, 1984; Wubbels, Créton, & Hooymayers, 1985).

In their research, Wubbels, Créton, and Hooymayers (1985) investigated the discipline problems of beginning teachers. They found that beginning teachers showed less leadership and more uncertain behaviour. There was little difference between the behaviour of beginning teachers and more experienced teachers on the Student Responsibility/Freedom scale. When students are asked about their best and worst teachers one of the distinctions they make between the two is the amount of helping/friendly and understanding behaviour displayed. At the beginning of their teaching career teachers tend to show less helping/friendly and understanding behaviour that students like. As beginning teachers gain experience they tend to show more leadership, helping/friendly and understanding behaviours and less uncertain behaviour. This results in the class becoming more positive and cohesive. It is not only beginning teachers who can experience disorder in the classroom, Wubbels, Créton, and Hooymayers (1985) also found that some older teachers can be more strict and less friendly and understanding towards students. Thus, the relationships of the beginning teachers and some older teachers are perceived by their students as worse than their relationships with younger experienced teachers.

The studies on interpersonal behaviour and length of teaching time has led some researchers to focus on professional development and teacher interpersonal behaviour. Wubbels, Levy and Brekelmans (1997) described the importance of teachers developing positive relationships with students, rather than focusing only on methodology and curriculum. As teachers become more aware of their interpersonal behaviour with students, and develop teaching methods which support positive relationships, then hopefully students will perceive their teachers closer to their ideal.

2.5.9 Comparison of Male and Female Student Perceptions of Teacher Interpersonal Behaviour

Khine and Fisher (2003) found significant associations between student perceptions of teacher interpersonal behaviour and the sex of students. Their results indicated that females had a more positive perception of the leadership, understanding and helping/friendly behaviour of their teachers. Rickards and Fisher (1997) also found clear differences between male and female student perceptions of teacher interpersonal behaviour. Fisher and Rickards (1997) also concluded that females perceive their teachers more positively than males, with males perceiving their teachers as more uncertain, dissatisfied, admonishing and strict.

2.6 RESEARCH IN HEALTH SCIENCE

It is important to note that some researchers refer to health science as physical education, sport and/or health and where a researcher has used these terms, the same terms have been used in this literature review to maintain the researcher's true meaning. Health science literature generally supports the learning environment literature but while there has been some research done and papers published on student and teacher interpersonal behaviour in health science classrooms, the literature is not extensive and, more often than not, is indirectly related to the literature previously discussed in this chapter.

Iso-Ahola (1995) noted that the importance of relationships in sports was recognised in the late 1970s with the knowledge base improving since then. However, he argues that the field of interpersonal relationships in sports psychology remains under developed. Vealey (1993) concurred with this, finding a low percentage of empirical studies on relationships published in a major sports psychology journal. Wylleman (2000) observed that the focus of sports psychological research since the late 1970s has been on athlete-coach relationships (Chelladurai & Saleh, 1978; Smith, Smoll, & Hunt, 1977; Smoll, Smith, Curtis, & Hunt, 1978). This was broadened in the 1980s to include the parents of young athletes (Smith, Smoll, & Smith, 1989). A more

recent approach involves investigating the influence of an athlete's social support on his or her well-being (Hardy, Richman, & Rosenfeld, 1991; Rosenfeld, Richman, & Hardy, 1989).

It is interesting to note that even when athlete-coach relationships are being investigated, the results and conclusions reached by the researchers are similar to the results and conclusions reached by studies conducted in learning environments when using the QTI. For instance, when investigating athlete-coach relationships using the *Leadership Scale for Sports* (LSS) (Chelladurai & Saleh, 1980), Salminen and Liukkonen (1996) found that coaches believed that they gave more instructions, showed greater social support and were more rewarding than their athletes thought they were. The coaches also believed that they were more democratic and less autocratic than the athletes did. Salminen and Liukkonen (1996) concluded that coaches seemed to see themselves in a more positive way than their athletes did.

Hastie (1994) found that positive teacher interpersonal behaviour with students increased teacher effectiveness and student learning in physical education. Colvin (1999) believed that physical education teachers may be meeting classes less often and/or having to teach several classes at the same time, so providing meaningful interactions with students is becoming harder and harder. Colvin (1999) provided health science teachers with an example of how teachers can objectively assess their interaction patterns with students, whilst providing strategies for change if needed. In her study Colvin (1999) described how a video camera could be used to tape a lesson or series of lessons with the teacher using a tally sheet to keep a record of different types of interactions (skill interactions, behaviour related interactions) and to record the length of different interactions. Once the tally sheet has been analysed, Colvin (1999) suggested various questions that teachers should be able to consider and answer concerning their interpersonal behaviour with their students. These are:

1. Are you leaving out some children or groups of children?
2. Is management driving your instruction?
3. Are one or two students calling out repeatedly and demanding your attention?
4. Are you providing the same information to each child?

5. Do you play favourites?
6. How and where do you move around the teaching area?
7. What about the child who tries to blend into the woodwork?

(Colvin, 1999, pp. 17 – 19)

Colvin (1999) believed that by answering these questions and reflecting on their answers, teachers should be able to interact with all students on an equal basis.

Banville and Rikard (2001) also provided health science teachers with some useful tools to encourage them to reflect on their teaching behaviour, believing that teachers must understand their teaching and how it can be changed before change can happen in physical education classrooms. They suggested that interpersonal behaviour between students and teachers during class time provided insights into many aspects of the learning environment.

Whitehead (1990) wrote an interesting article on the importance of student and teacher interpersonal behaviours in physical education and how this can be the key to success. She argued that unlike 'academic' subjects, in which students can generally hide their lack of ability or talent, physical education is about the person's body and this is always on view, even when not in physical education lessons. Whitehead (1990) felt that because the body is a major part of an individual, physical education is a subject particularly vulnerable to being disliked and even hated. The teacher's attitude towards and relationship with students, is very important so that a student's self concept and self respect are not damaged. Whitehead (1990) indicated that physical education lessons can be immensely damaging to a student due to:

- repeated failures;
- recurrence of unobtainable goals;
- lack of understanding of task, leading to embarrassment;
- lack of praise, encouragement and acceptance of effort from the teacher;
- lack of interest, understanding and sensitivity from the teacher;
- persistent criticism by the teacher;
- sarcasm and/or dismissal of ability by the teacher;
- public criticism by the teacher;

- exposure to ridicule and humiliation from peers;
- uniform that accentuates deviance from the norm of physical shape and/or size; and
- the drawing of attention, by the teacher, to any particular physical abnormality.

(Whitehead, 1990, p. 29)

Whitehead (1990) stressed the importance of avoiding the damaging behaviour mentioned above. Instead, teachers should aim to develop a climate in physical education lessons that is encouraging, positive and where students experience situations that enhance their movement potential and allow students to develop positive self worth. If student and teacher relationships are positive and allow students to take part in lessons in a positive, non-threatening manner, then Whitehead (1990) believes that students should take away a positive attitude towards physical activity when they leave school, which should lead to continued participation in physical activity with all the benefits of good health and an enhanced quality of life.

Macfadyen (1999) found that students preferred a friendly, relaxed teacher. Students dislike authoritarian teaching styles. Research by Rice (1988) showed that students liked physical education teachers who were friendly. These results were confirmed by Luke and Sinclair (1991), who concluded that students liked physical education teachers with high expectations, who are focused on learning, and are sensitive and caring.

2.6.1 Student Perceptions in Health Science

There have been a number of studies using a variety of instruments investigating the behaviour of physical education student teachers in colleges. For instance, Underwood (1988), Mawer (1989), and Grant (1990) used the *Academic Learning Time – Physical Education* (ALT – PE) instrument (Siedentop, Tousignant, & Parker, 1982) that was originally developed to record student behaviour, but has since been used to describe teacher behaviour by inference. Smith, Kerr, and Wang (1993) used another instrument to quantify student and teacher behaviour, the

Physical Education Teacher Assessment Instrument (PETAI) (Phillips, Carlisle, Steffen, & Stroot, 1986). These studies have been used to examine the behaviour of physical education student teachers as part of teacher training with the aim of decreasing the need for intervention later in a teacher's career (Laker, 1994).

Sanders (1996) stated that student perceptions of their schooling have rarely been studied and that students have not been consulted about their experience. A number of studies have, however, been undertaken in the area of health science using student perceptions (Carlson, 1995; Davidson, 1982; Dyson, 1995; Hopple & Graham, 1995; Sanders & Graham, 1995; Supapom, 2000). In fact, Boyall (1982) argues strongly for the use of student feedback in health science, believing that it provides another perspective about a teacher's teaching. Davis (1982) states:

> Children interpret the world differently from adults, not because they have not yet learned to see the world properly, but because they are viewing it in their own terms, terms which some of these researchers have come to view as the culture of childhood.
>
> (Davis, 1982, p. 2)

A major reason for listening to what students think about their learning environment is that students comprehend the world differently from their teachers and their interpretation should heard so teachers can better understand the unique culture of students (Fine & Sandstrom, 1988). Brooks and Fusco (1984) also recognised the need for using student perceptions in research as their point of view provides the teacher with critical information to allow them to develop appropriate programs for their students. Some of the studies involving health science classrooms and student perceptions are discussed in the following paragraphs.

Treasure and Roberts (2001) investigated the relationship between student perceptions of the motivational climate and their beliefs about the causes of success, their preference for challenging tasks, and their satisfaction in physical education. They concluded that in a mastery-orientated motivational climate, students believe that motivation or effort cause success and satisfaction.

Physical education and physical education teachers were investigated using the perceptions of high, average and low performance second graders by Martin (2002). She found that students enjoy physical education and they liked the activities in their program. Students liked teachers who they considered 'nice' as opposed to 'mean'. Students who had low and average performances made reference to safety, injury and behavioural related issues, leading Martin to conclude that students lower in skill have different experiences and concepts about physical education compared to high achievers. These results are supported by Carlson (1995) and Silverman, Woods, and Subramaniam (1999).

Walling and Duda (1997) investigated what students perceived as the important purpose of physical education and found that students believed these were: having an enjoyable experience; fostering mastery/co-operation with their peers; and learning about health and fitness concepts and the promotion of an active and healthy lifestyle. Walling and Duda (1997) found that students related success in physical education to having an 'encouraging teacher'.

In the last 75 years, student perceptions in health science have been used extensively at college level but have largely been ignored at the secondary level of education (Engstrom, 2000). The purpose of the study conducted by Engstrom (2000) was to examine the correlation between teacher behaviour and student perceptions in a secondary school physical education environment. The research was conducted using the PETAI (Phillips, Carlisle, Steffen, & Stroot, 1986) and a *High School Physical Education Student Response Sheet* (HSPESRS) developed by Engstrom in 1997. Although Engstrom (2000) found that student perceptions of program design might not be warranted at the high school level, there were, however, positive correlations between overall teacher evaluations and student interest in an activity and the students' level of involvement, leading Engstrom (2000) to conclude that high school students should be given the opportunity to express their opinions about program design.

2.6.2 Student Attitudes in Health Science

Physical education teachers can have a very strong influence on student attitudes towards physical activity (Figley, 1985; Luke & Sinclair, 1991; Woodhouse, 1996). Macfadyen (1999) reported that a large number of students named their physical education teachers as having the most influence on their attitudes towards physical activity. It has been recognised by health science professionals that the health benefits associated with physical exercise are only realised if activity is continued throughout life (Siedentop, 2000). Fox and Biddle (1988) stated that physical activity eventually becomes a choice behaviour, and that physical educators have a major role to play in encouraging students to make physical activity a lifestyle habit. They believe that a key to the success of this is development of positive attitudes to physical activity in students.

Fox and Biddle (1988) discussed the importance of attitude in physical education as well as some general attitude characteristics. They also presented three models that have been used in the past to gather data on young peoples' attitudes towards physical activity.

The first model presented by Fox and Biddle (1988) is the *Attitude Towards Physical Activity Inventory* (ATPA), which was developed by Kenyon (1968). In his study, he examined 4,000 secondary school students from England, Australia, Canada and the USA and found that there were six major reasons for taking part in physical activity, these are:

- a social experience;
- health and fitness;
- thrill and excitement;
- an aesthetic experience;
- release of tensions and aggression; and
- commitment.

The second model discussed by Fox and Biddle (1988) is The *Psychological Model of Physical Activity Participation* (see Figure 2.10) developed by Sonstroem (1978) in which he found that students who perceive themselves to have high levels of physical ability have a more positive attitude to physical activity. This in turn leads to greater involvement in physical activity, which generally increases physical ability. The improved physical ability results in a greater perceived physical ability and increased self esteem. The process is cyclic in nature, either in an upward spiral resulting in continued participation in physical activity or in a downward negative spiral, which can lead to withdrawal from physical activity.

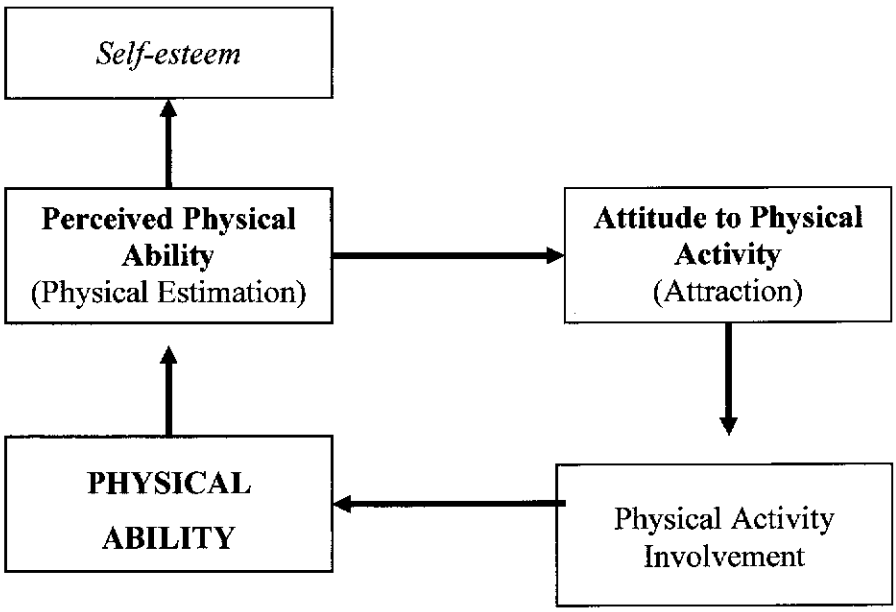


Figure 2.10. Sonstroem's Psychological Model of Physical Activity Participation.
(In Fox and Biddle, 1988, p. 108)

The third model presented by Fox and Biddle (1988) is the *Theory of Reasoned Action* originally proposed by Fishbein and, according to Fox and Biddle (1988) is best reported on in Ajzen and Fishbein (1980). This model, modified by Fox and Biddle (1988) (see Figure 2.11), shows a link between attitude and behaviour as part of a decision making process, affected by personal beliefs and social values. Conclusions reached from their research were that this model could provide insights

into some possible components of attitude that could be the focus of intervention through physical education programs. In all, Fox and Biddle (1988) recognised that investigating attitude is a complex task and that many factors influence an individual's attitude towards physical activity. They found that self perception of physical activity appears to have a strong influence on attitudes to physical activity.

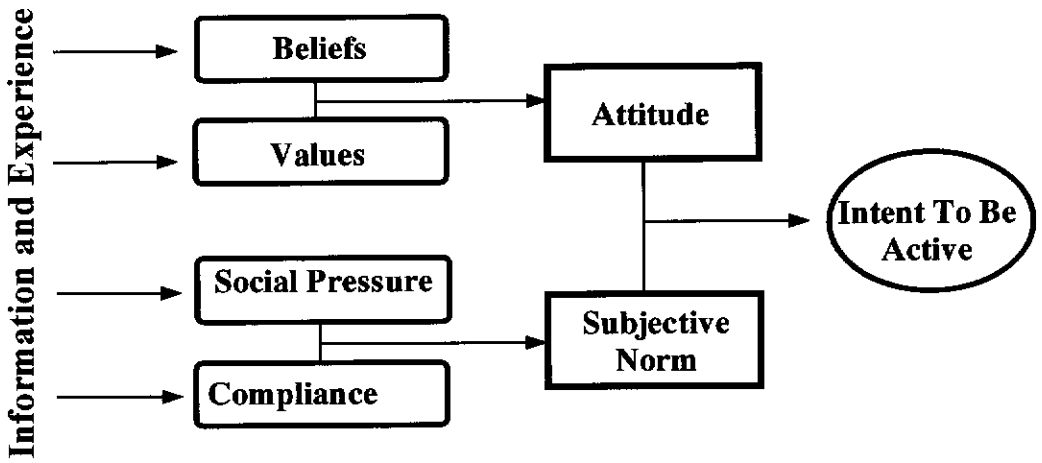


Figure 2.11. Modification of Fishbein's attitude model by Fox and Biddle.

(Fox & Biddle, 1988, p. 109)

Ryan, Fleming, and Maina (2003) found that students rated teachers as a powerful influence on attitudes towards physical education. They also found that high school physical education students enjoy having a variety of activities, like the teachers, have fun in physical education classes, and dislike short lessons. What they like about their teachers is that they are friendly and have good physical skills. Student dislikes are related to teachers not relating them and to teachers being biased towards more skilful students. These findings support previous research by Luke and Sinclair (1991), Rice (1988), and Stewart, Green, and Huelskamp (1991).

2.6.3 Differences Between Male and Female Students in Health Science

Teachers have a very influential effect on student self esteem. Sex bias, however, can be a serious detriment to learning and this effect frequently differs between males and females (Sadker & Sadker, 1994). Weiller and Doyle (2000) believed that a teacher's male/female bias is not the only sex factor that affects a teacher's interpersonal behaviour. They suggested that each person's behaviour influences the other's behaviour and that male and female students may differ in how they seek information and help from the teacher. In addition to this, Anderson and Adams (1982) and Irvine (1986) agree that students who initiate interactions with teachers are more likely to receive teacher-initiated attention. Results from previous studies on sex bias in physical education indicate that in the past a teacher's interpersonal behaviours have been sex biased (Dunbar & O'Sullivan, 1986; Knoppers, 1988). More recently, however, McBride (1990) found no sex bias in teacher interpersonal behaviour with males and females, nor in student perceptions about interpersonal behaviour. Similarly, Sarkin, McKenzie, Thomas, and Sallis (1997) found no evidence of significant sex differences in student physical activity levels.

Weiller and Doyle (2000) undertook a study to examine the sex bias (represented by teacher-initiated interactions) and sex differences (represented by student-initiated interactions) as they relate to teacher interpersonal behaviour in a physical education class. In their study, Weiller and Doyle (2000) utilised the *Teacher-Student Interaction* (TSI) (Logsdon, Barrett, Ammons, Broer, Halverson, McGee, & Roberton, 1984) to investigate the frequencies of student- and teacher-initiated interactions; to discover to whom teacher-initiated interactions were directed; and to look at the nature of the teachers' instructional statements. Their results contradicted much of the earlier work of the 1980s (Knoppers, 1988; Sadker & Sadker, 1985) but it did support more recent work (McBride, 1990). This led Weiller and Doyle (2000) to deduce that traditional attitudes towards both males and females in primary education are shifting. They concluded by saying that it appears that physical education teachers are fostering more equitable relationships and that continued investigations into teacher interpersonal behaviour should enable physical educators to provide high-quality programs for all students.

More recent studies investigating sex differences between male and female students in health science classes have found that male and female students share similar likes and dislikes about their physical education teachers (Brustad, 1996; Fleming, Mitchell, Coleman, & Gorecki, 1997; Ryan, Fleming, & Maina, 2003; Stewart, Green, & Huelskamp, 1991). Chung and Phillips (2002) found that male students had more positive attitudes towards physical education than female students. Smoll and Schutz (1980) found that males displayed more positive attitudes to activities that were deemed to be challenging and had an element of risk, while female students preferred physical activity for social reasons. Park (1995) found significant sex differences in overall attitude, general attitude, and physical education attitude - with male students more positive than female students in all aspects that were measured. Valdez (1997) found no significant relationship between sex, ethnicity or social-economic status and student attitudes.

2.7 SUMMARY

The foundation of learning environment research stems from the work of Lewin (1936) and Murray (1938). Other researchers who have helped shape learning environment research are Leary (1957), Moos (1974), Stern, Stein, and Bloom (1956), and Watzlawick, Beavin, and Jackson (1967). From this previous research, Wubbels, Créton, and Hooymayers (1985) developed the Model of Interpersonal Teacher Behaviour and the original version of the QTI in Dutch, consisting of 77 items. In the late 1980s, Wubbels and Levy (1991) developed an American version of the QTI, consisting of 64 items. The Australian version of the QTI consisting of 48 items which was used in this study was developed by Fisher, Fraser, and Wubbels (1993).

Reliability and validity of the Australian version of the QTI has been proven by den Brok, Rickards, and Fisher (2003), Fisher, Henderson, and Fraser (1995) and Wubbels (1993).

Data gathered from past use of the QTI have shown:

- that student perceptions of a teacher's interpersonal behaviour is a better measure of the quality of a teacher's teaching than teacher perceptions are (Wubbels, Brekelmans, & Hooymayers, 1991);
- teacher perceptions of their own interpersonal behaviour are more positive than students (Wubbels, Brekelmans, & Hooymayers, 1987);
- there is a high correlation between student perceptions of teacher interpersonal behaviour and affective outcomes (Wubbels, 1993);
- there is a significant correlation between student perceptions of teacher interpersonal behaviour and cognitive outcomes (Fisher, Henderson, & Fraser, 1995);
- students perceive beginning teacher to be less dominant than more experienced teachers (Levy, Wubbels, & Brekelmans, 1992); and
- female students generally perceive their teachers more positively than do male students (Fisher & Rickards, 1997).

Although very little health science literature directly relates to the learning environment literature on the QTI, there is a connection between the two. For instance, the importance of relationships in sports is recognised (Wylleman, 2000). There have been research studies on athlete-coach relationships (Salminen & Liukkonen, 1996), which have found similar results to studies involving the QTI. There are some studies that involved the investigation and discussion of student-teacher relationships in health science classrooms (Banville & Rikard, 2001; Colvin, 1999). Whitehead (1990) also presented an excellent paper supporting the need for good relationships between teachers and students in health science classrooms.

Studies in health science classrooms have found that students prefer friendly, sensitive, caring, and relaxed teachers who have high expectations and are focused on learning (Luke & Sinclair, 1991; Macfadyen, 1999; Rice, 1988). Student perceptions have also been used extensively to gather data on a variety of factors in health science classes (Boyall, 1982; Davidson, 1982; Martin, 2002; Sanders, 1996; Treasure & Roberts, 2001). Most studies using student perceptions have been conducted in colleges rather than high schools. Student attitudes to health science

have also been extensively investigated (Figley, 1985; Fox and Biddle, 1988; Woodhouse, 1996). Finally, there has been research into the differences between male and female students in health science classes (Chung & Phillips, 2002; Sadker & Sadker, 1994; Weiller & Doyle, 2000).

It would appear that the use of the QTI in health science will provide new knowledge and information for both areas of literature, since at this time there is no published research investigating the use of the QTI in health science classrooms.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

As discussed in Section 2.1, a great deal of research has been conducted into learning environments using a variety of instruments. In particular, the Questionnaire on Teacher Interaction (QTI) has been used in learning environment research to investigate the perceptions that students have of teacher interpersonal behaviour with the class. Originally, the QTI was used as an independent questionnaire, however, in recent years it has frequently been used in conjunction with other questionnaires. For instance, Fisher, Kent, and Fraser (1998) used the QTI in combination with the Myers-Briggs Type Indicator (MBTI), Khine and Fisher (2002) and Fisher, Rickards, Chiew, and Wong (1997) combined the QTI with the Test of Science-Related Attitudes (TOSRA) (Fraser, 1981a), and Henderson, Fisher, and Fraser (2000) used the QTI in conjunction with the Science Laboratory Environment Inventory (SLEI).

This study is one of the first major studies to use the QTI in health science classes and to use it in conjunction with an Attitude Scale.

As indicated in Chapter 1, the 10 objectives of this study are:

- to determine the validity and reliability of the 48 item version QTI in health science classes;
- to determine the validity and reliability of an Attitude Scale;
- to investigate which typology best represents the average health science teacher in Tasmania;

- to compare student and teacher perceptions of health science teacher interpersonal behaviour;
- to investigate the associations between student perceptions of teacher interpersonal behaviour and student attitudinal outcomes;
- to investigate the associations between student perceptions of teacher interpersonal behaviour and student cognitive outcomes;
- to investigate the associations between student perceptions of teacher interpersonal behaviour and teaching experience;
- to investigate the differences in male and female student perceptions of teacher interpersonal behaviour in health science classes;
- to determine if student comments reflect the statistical results from the use of the QTI; and
- to determine if results obtained from this research support the experiences of the researcher as a health science teacher.

The methodology outlined in this chapter involves justifying the use of both quantitative and qualitative research methods; identification of the sample; description of the instruments used; procedures followed for gathering the data; and how the data were analysed.

3.2 SAMPLE SELECTION

The sample for this research was chosen from grade 9 and grade 10 health science students and their teachers who were undertaking the new Tasmanian Qualification Authority (TQA) health science syllabuses in Tasmania, Australia. These grades were chosen because students were studying similar syllabuses (see Appendix A and Appendix B). The researcher, a health science teacher, also provided qualitative data in the form of a personal reflective story.

In selecting the sample, the three school sectors in Tasmania, the State Education Department System, the Catholic Education System and the Independent School Sector were considered. The Tasmanian Education Department schools are further categorised as 'A' (hard-to-staff, generally low socio-economic areas and/or isolated), 'B' (some staffing problems, generally country/semi-isolated areas) and

non-categorised schools (school situated within travelling distance of major urban development that are not 'A' or 'B' schools). The selection criteria for state schools took these categories into account, with three 'A' schools, five 'B' schools and six non-categorised schools being selected for the study. Nine were urban-based schools and seven were in rural areas. Two Catholic System schools also took part in the study. Unfortunately no Independent Schools were able to do so.

From the schools involved in the quantitative aspects of this study, 37 teachers, 18 males and 20 females, took part. The teaching experiences of the teachers ranged from first-year-out to 30 or more years. The total sample included 1471 students, 751 females and 720 males, in grade 9 and grade 10, from 75 health science classes in 16 schools in Tasmania, Australia. The classes were undertaking the health science curriculum and thus, were both theoretical and practical in nature.

Qualitative data were collected through the use of focus groups. Classes contributing to the focus groups were selected according to the category of the school and the years of teaching experience of their teachers. This was done to ensure that there were students from a variety of different types of schools (urban, country, et cetera) and students with teachers who were in their first year through to those with 15 or more years of teaching experience. After identifying focus group classes, teachers were then asked to select a group of approximately six to eight students and ensure that the group included a mix of students in terms of:

- male and female students
- TQA cognitive outcomes in health science;
- attitude to health science as perceived by the teacher; and
- relationship with the teacher as perceived by the teacher.

Teachers were also asked to make sure students who were selected would be comfortable talking in a group. Teachers from individual schools kept their principals informed regarding this study and permission was obtained from parents when required.

3.3 TRIANGULATION

Denzin (1988) described the need for researchers to triangulate their research designs. Triangulation is the method of employing more than two methods or more than two data sources to support findings. Denzin stated that interpretations that are based on more than two strategies of collecting data are sure to be stronger or sounder than conclusions drawn from one method. Flick (1992) supported Denzin's theory and believed that triangulation allows for multiple perceptions to clarify meaning, accepting that interviews or interpretations are never perfectly repeatable and that triangulation also allows meaning to be clarified by identifying different ways the phenomenon is being interpreted. Morse (1998) also believed that using more than two methods of research allows the researcher to gain a more holistic view of the learning environment. Jackson (1968) took it a step further and stated:

> Classroom life, in my judgement, is too complex an affair to be viewed or talked about from any single perspective. Accordingly, as we try to grasp the meaning of what school is like for students and teachers we must not hesitate to use all the ways of knowing at our disposal.
>
> (Jackson, 1968, vii – viii).

Hence, in the search to triangulate and to gain a greater understanding of teacher interpersonal behaviour in health science classrooms in Tasmania, multiple methods of obtaining information were implemented. This involved Methodological Triangulation and Data Source Triangulation

3.3.1 Methodological Triangulation

As discussed in the previous chapter, there has been a great deal of research into learning environments. More recently, it has become acceptable to combine both quantitative and qualitative methods of research, in fact, it is encouraged (Howe, 1988). Fraser and Tobin (1991) suggested employing qualitative and quantitative data in classroom environment research. Rickards and Fisher (1997) suggested that qualitative research methods help refine questionnaires and clarify patterns identified by quantitative data and can give a context or a personal story to the statistical data. Recent learning environment studies by Rickards and Fisher (1997), Lee, Fraser, and

Fisher (2003), She and Fisher (1998), and Waldrip and Fisher (2000) have combined quantitative and qualitative research methods with success.

The Methodological Triangulation (see Figure 3.1) involved quantitative data (the QTI and an Attitude Scale) and qualitative data (focus groups interviews and a personal reflective story by the researcher). These are discussed in greater detail in section 3.4.1.

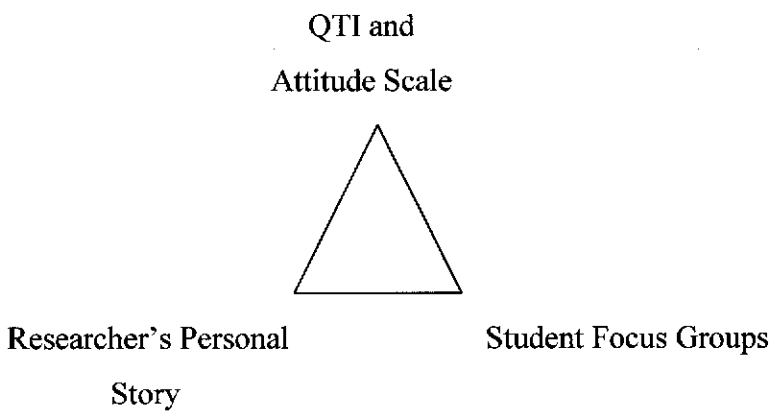


Figure 3.1. Methodological Triangulation for this study.

3.3.2 Data Source Triangulation

Fraser (1996) stipulated that different research studies call for different techniques depending on the sample size or 'grain size'. The coarser (larger) grain size method is usually quantitative, in this case - the use of the QTI and an Attitude Scale. The finer grain sizes were the focus groups that were interviewed as well as a personal reflective story from the researcher. This small grain size meant that more intensive qualitative data were collected.

As discussed in section 3.2, the sample selection for this study was grade 9 and grade 10 students, their teachers and the researcher. Thus, the Data Source Triangulation (see Figure 3.2) involved:

- students who completed the questionnaires and took part in focus group interviews;
- teachers who completed the teacher's self questionnaire; and
- the researcher, who narrates a personal story reflecting on her own experience as a health science teacher and on the results of this study.

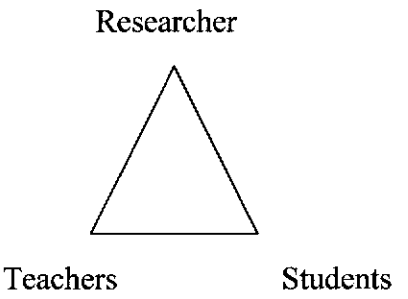


Figure 3.2. Data Source Triangulation for this study.

3.4 RESEARCH INSTRUMENT SELECTION

3.4.1 Questionnaire on Teacher Interaction (QTI)

As discussed in section 2.5 of this thesis, a major focus of the health science syllabuses in Tasmania is relationships and interpersonal behaviour between people. The QTI was used for the collection of data on how students perceive teacher interpersonal behaviour. The QTI has been reviewed in detail in the previous chapter. This instrument was selected because it has been shown to be reliable in a number of different subject areas and countries in both the long form of 64 items (Wubbels & Levy, 1991) and the shorter form of 48 items (Fisher, Henderson, & Fraser, 1995). The 48 item questionnaire was chosen for this study because it has been shown to be reliable in Australian as well as overseas studies and takes less time for classes to complete compared to the longer form of 64 items. Past use of the QTI in Tasmanian schools by Wubbels (1993), Fisher, Henderson, and Fraser (1995) and Fisher, Fraser, Wubbels, and Brekelmans (1993) showed the QTI to be a reliable instrument.

Neither the 64-item form nor the 48-item form of the QTI have been validated previously for use in health science classes. The validation of the 48-item version of the Student QTI with a sample of health science classes is one of the unique aspects of this study.

One question from the original 48-item questionnaire was adapted to suit the health science subject area. Item 44 originally stated, "This teacher is severe when marking papers". For the purpose of this study item 44 was adapted to read, "This teacher is severe when marking". The reason for this change is that health science classes in Tasmania have both theoretical and practical components. Generally, however, there is greater focus on the practical component. Thus, students are more often marked on the practical component and it was considered that by taking the word 'paper' out of the question then students would see marking by the teacher for the whole subject not just part of it.

3.4.2 Cognitive Outcomes

To enable information to be collected about student cognitive outcomes, the six possible course numbers which students could be working on in grade 9 (see Appendix A) and grade 10 (see Appendix B) were collected. The reason for this was that the higher the course codes, the more demanding the course is meant to be. There are five possible TQA cognitive grades that are awarded. These are:

- Preliminary Achievement (PA);
- Satisfactory achievement (SA);
- Commendable Achievement (CA);
- Higher achievement (HA); or
- Exceptional Achievement (EA)

Twice a year TQA Moderation Meetings are held. These meetings enable teachers from each school undertaking the health science syllabuses to meet and discuss student work and assessment. The aim of these meetings is to make sure that students across Tasmania are assessed using the same standards (see

www.tqa.tas.gov.au/1234/RND01) and so achievement awards (overall mark of assessment) between schools are standardised and comparable.

The students were asked to circle the course code and TQA award that the teacher indicated they were achieving (Appendices A and B describe in detail how teachers assess students and how the final TQA award is calculated).

3.4.3 Attitude Scale

In recent years, it has become widely accepted that attitude plays an important part in a student's education (Fraser, 1981b). Tasmanian health science teachers recognise this and it is reflected in the importance it is given in the grade 9 and grade 10 health science syllabuses (Department of Education, Community and Cultural Development, 1998). In this study, student attitudes were assessed with an eight-item Attitude Scale adapted from the Test of Science-Related Attitudes (TOSRA) (Fraser, 1981a). The Attitude to This Class Scale has been field-tested and has been shown to be reliable in previous studies (Henderson, Fisher, & Fraser, 1995; Rickards & Fisher, 1997). It has, however, not been used in health science classes. Therefore, the validation of an Attitude Scale with a sample of health science classes is another unique aspect of this study.

3.4.4 Focus Group Interviews

Morgan (1988) argued that focus group interviews can be a self-contained method of collecting data or as a supplement to both qualitative and quantitative methods, while Stewart and Shamdasani (1990) noted that focus groups were originally designed for exploratory research. It is now widely accepted that they can be used as a confirmatory tool as well.

Fontana & Frey (1998) describe focus group interviews as the questioning or interviewing of several individuals simultaneously in formal or informal settings. The open response format of the focus groups allows a large and rich amount of data to be gathered in the respondent's own words. It also allows respondents to react to

each other and discuss their responses, providing data that may not have been discovered in individual interviews (Stewart & Shamdasani, 1990). Because the questions/topics for discussion are designed by the researcher, the groups are more controlled than participant observations, but because of the nature of the group interaction, the focus group is less controlled than individual interviews (Morgan, 1988).

In this study, focus groups were used to supplement data gathered through the use of the QTI and Attitude Scale.

3.4.5 Researcher's Personal Reflection

Punch (1998) indicated that in the past, narrative and stories have been used in many different research settings: in education from both student and teacher points of views; in medical and illness studies; and in studies of life in organisations. He also believed that stories can give a "uniquely rich and subtle understanding of life situations, and the story is often a feasible way of collecting data just because it is such a common device in everyday interaction" (Punch, 1998, pp. 222-223).

Richardson (1998) described self narratives to be highly personalized, revealing text in which the writer tells stories about his or her experiences in life. Munro (1998) indicated that by listening to other peoples' stories, she began to gain a deeper understanding of those people as well as gaining an understanding of her own stories. When used properly, Leiblich, Tuval-Mashiach and Zilber (1998) believed that narratives can provide a key to understanding research and data. This is also supported by Atkinson (1998) who believed that "a personal narrative is the most helpful research approach available to gain subjective perspective and understanding" of the research involved (Atkinson, 1998, p. 13).

Stenhouse (1975) advocated that teachers should become researchers in their own classrooms and examine their own practices critically and systematically. Connelly and Clandinin (1988) draw out an interesting difficulty with the objectivity of the researcher. Personal Practical Knowledge is the term used to describe the teacher's

knowing in the classroom. It takes into account past experience, the present situation and future plans. This sort of knowledge is both subjective and objective. Our personal practical knowledge and the stories that make up our narratives are affective knowledge and are laden with human emotion, value and aesthetics. To rely on them as the only source of information could produce bias. Despite bias, Merriam (1988) supported the 'teacher as researcher' as a legitimate source of qualitative data.

The researcher's personal story combines reflections on health science teaching experiences with the results of this study.

3.5 DATA COLLECTION

3.5.1 Quantitative Data (QTI and Attitude Scale)

In May 2001, a letter was sent to the teacher in charge of the health science learning area at each of the selected schools to gain their permission to take part in this study. The letter introduced the researcher, the research topic and the QTI and Attitude Scale. The letter also included a brief outline of time frames, for example: how long it generally takes a class to fill out the questionnaires; when the questionnaires would need to be completed; how they would be sent and retrieved by the researcher; the confidential nature of the data; how the study had the support of the Principal Curriculum Officer for health science in Tasmania; and that they would need to check with their principals before taking part in this study.

All schools that were contacted, except one, agreed to take part in the study.

The designated person for each school was contacted again in June 2001. This was to enable the researcher to find out the number of questionnaires needed for each school and to discuss in greater detail how and when they would be completed. Schools received an instruction sheet for the classroom teachers so that questionnaires would be administered with the same rigour in each school. The questionnaires were sent to schools at the end of June so that they could be completed in the first three weeks of July 2001.

Schools were requested to have the questionnaires completed by students and teachers within the same lesson. Questionnaires were returned by students to the teacher via an envelope on the teacher's desk. This enabled students to feel more confident about confidentiality and they could be honest in their answers. It was requested that completed sets of questionnaires be returned to the researcher no later than mid-July 2001. After this date the researcher needed to contact a number of schools regarding their progress with the questionnaires. Some schools delayed completing the questionnaires until early August since student reports were due then and they could then provide students with accurate achievement awards to be recorded in the appropriate place on the questionnaire.

3.5.2 Qualitative Data (Focus Groups Interviews)

Focus group interviews were conducted over a three-week period in October 2001. Interviews were conducted in a comfortable, quiet and private room at participating schools. During the interview the researcher was professional, focused, interested in all conversation and appropriately dressed. All appointments were kept and made on time. This ensured that participants felt respected and valued.

At the beginning of the interview it was explained to the students what the interview was about: that it would be tape-recorded; how it was connected to the questionnaire they completed earlier in the year and; most importantly, that anything they said was to remain with the group and not to be discussed outside the interview. They were also informed that anything they said about their teacher would not be repeated to the teacher and that when the research was written up, teachers, schools and focus groups would not be identifiable; confidentiality would be maintained at all times. Students were also given the option of telling the researcher their name or choosing to remain anonymous.

From the original objectives of this study, there were three objectives of the focus group interviews:

- to develop a greater understanding of teacher interpersonal behaviour in health science classes;
- to investigate the differences in student perceptions of teacher interpersonal behaviour of experienced and less experienced teachers; and;
- to investigate the differences in male and female student perceptions of teacher interpersonal behaviour in health science classes.

The students were interviewed using pre-set questions, supplemented with flexible and impromptu questions to make sure that students explored their ideas fully. Questions were initially fairly general and designed to be easy to answer. Some common questions were:

- How often do you have health science a week?
- What are you doing in your class at the moment?
- What is your health science class like?
- When you think of a 'good' health science teacher, describe your relationship with them. What are some of the qualities you like?
- When you think of a 'not so good' health science teacher, describe your relationship with them. What are some of the qualities you don't like as much?
- What are the good things about your relationship that you have with your teacher? and
- Describe the type of relationship you have with your teacher.

This was to allow the researcher and students to begin to relax and get to know each other so that responses would be more honest and open. As the focus groups progressed, questions were designed to relate to each sector of the Model for Interpersonal Behaviour (see Figure 2.3, section 2.4.1). For instance, some of the questions relating to leadership behaviour were as follows:

- How does your teacher control what happens in your class?
- What type of leadership roles does your teacher take? What type of leadership roles does your teacher allow you to take?

- How would you describe your teacher as a leader?

The second and third objectives for the focus group interviews related to teacher experience and how males and females saw their teacher. The questions related to these objectives were:

- Do the boys and girls in your class have different relationships with your teacher? How do they differ? Why do you think this happens?
- Is there a difference in your relationship between less experienced and more experienced teachers?
- Is it easier to have a relationship with younger or older teachers? Is it age or years of teaching experience that make the difference?
- Compare the relationship you had with your teacher last year to this year. How is it different? What do you think causes this? (This question was only relevant to students who had changed teachers from the previous year).

3.6 DATA ANALYSIS

The data analysis focused on the objectives of the study. Two types of analysis were conducted: statistical analysis using quantitative data, and an analysis of qualitative data, to enable a comparison to be made between the statistical data, student comments and the researcher's own teaching experience.

3.6.1 Quantitative Data (QTI and Attitude Scale)

To begin the data analysis, responses from the questionnaires were entered into a database. The SPSS software package was used to analysis data (Norušis, 1990).

3.6.2 Validation of the Questionnaire on Teacher Interaction (QTI)

An important feature of learning environment instruments is that each scale has high internal consistency (Goh & Fraser, 1996). For scales to have valid internal consistency means that students will respond to each of the items in the scale in a similar manner. The reliability or internal consistency of the QTI and Attitude Scale was established using the Cronbach Alpha Coefficient (Cronbach, 1951) using the student and class mean as the unit of analysis. The alpha reliability coefficient can vary from 0.00 to 1.00, 0.00 indicating very low or no reliability and 1.00 indicating perfect reliability (Punch, 1998). According to Nunnally (1967), 0.60 is considered a sufficient level for the internal consistency of these types of scale.

Another important aspect of learning environment instruments is the ability to differentiate between the perceptions of students in different classes (Rickards & Fisher, 1997). That is, students in one class should perceive their teacher fairly similarly, but differently from students in other classes. Therefore, the second analysis performed on the data was an analysis of variance (ANOVA) using a one-way ANOVA with class membership as the main effect and using the individual as the unit of analysis. The calculated ANOVA eta^2 statistic represents the amount of variance in a teacher's interpersonal behaviour scores accounted for by class membership.

Another desirable characteristic of a questionnaire like the QTI is that each scale in the instrument measures a different behaviour than that measured by any other scale (Wubbels & Levy, 1991). When simple correlations are performed, the resultant correlation coefficient may be positive or negative and range from –1.00 through 0.00 to +1.00: -1.00 indicates a high negative correlation, 0.00 no correlation and +1.00 a perfect correlation. As the eight scales of the QTI are represented by eight sectors arranged in a circular fashion, scales next to each other tend to merge slightly. Therefore it is expected that the correlation of each scale should be greatest with the scale next to it in the model and should have the lowest correlation (highest negative) with opposite scales (Wubbels & Levy, 1993).

3.6.3 Associations Between Student Perceptions of Teacher Interpersonal Behaviour and Student Attitudinal and Cognitive Outcomes

The associations between the scales of the QTI, Attitude Scale and student achievement were analysed using both simple correlation analysis and multiple regression analysis. The simple correlation (r) describes the correlation between each QTI scale, Attitude Scale and student cognitive outcomes, the standard regression coefficient (β) shows the association between an outcome and a particular QTI scale when all other QTI dimensions are controlled. The multiple correlation (R) was used to determine the overall correlation of the scales when taken together.

3.6.4 Associations Between Student Perceptions of Teacher Interpersonal Behaviour and Teaching Experience

To investigate if years of teaching experience influences student perceptions of their teacher, classes were grouped according to their teacher's experience: 1 – 3 years of experience, 4 – 10 years of experience and 10 or more years of experience. A one-way ANOVA with years of teaching as the main effect was used to see if some statistical relation exists between the experience of teachers and their interpersonal behaviour in the classroom.

3.6.5 Comparison of Male and Female Student Perceptions of Teacher Interpersonal Behaviour

Differences in male and female student perceptions of teacher interpersonal behaviour were examined using the within-class sex subgroup mean as the unit of analysis. This unit was used to eliminate the effect of class differences due to an uneven distribution of male and female students in the sample. Differences in student perceptions of teacher interpersonal behaviour were first investigated using a one-way multivariate analysis of variance (MANOVA) with the eight scales of the QTI as dependent variables. The Wilks' Lambda Criterion was found to be statistically significant ($p< 0.05$) therefore data were examined for significant differences between each of the QTI scales. Dependent t-tests were used due to the use of the within-class gender sub-group. The purpose of this analysis was to

examine whether there was a significant difference in perceptions of male and female students.

3.6.6 Qualitative Data (Focus Groups)

Each of the focus group interviews were tape recorded and then transcribed. The transcripts were categorised according to the eight scales of the QTI. Following the analysis and interpretation of the quantitative data, the qualitative data were analysed and interpreted to investigate how they related to the quantitative data.

3.7 SUMMARY

The review of the literature in Chapter 2 revealed that the QTI has been a successful and well-utilised instrument in a number of different subject areas. It has not been used in a large study involving health science classes. This study makes a new contribution to learning environment research because it validates the QTI in a subject where it has not been validated before.

This chapter details the research objectives and provides the rationale for the quantitative and qualitative research methods used in this study. It describes the sample selection and data collection process. This chapter also outlines the statistical methods used to determine the validity and reliability of the QTI and Attitude Scale, and the methods used to analyse both the quantitative and qualitative data.

The next chapter addresses the first objective of the study and describes the results of analysis used to validate the Questionnaire of Teacher Interaction (QTI) and Attitude Scale.

CHAPTER 4

RELIABILITY AND VALIDITY OF THE INSTRUMENTS

4.1 INTRODUCTION

A major objective of this study was the validation of the Questionnaire on Teacher Interaction (QTI) in health science classes in Tasmania. In the past, the reliability and validity of the QTI has been confirmed in previous studies in subject areas such as science, biology, chemistry, physics and mathematics. It has also been used in a number of countries such as The Netherlands (Wubbels & Levy, 1989), Australia (Fisher, Kent & Fraser, 1998), the U.S.A. (Fisher, Fraser, & Wubbels, 1993), Singapore (Fisher & Rickards, 1998), Taiwan (She & Fisher, 2000), Brunei (Khine & Fisher, 2002); and Korea (Lee, Fraser, & Fisher, 2003). It has, however, not been validated in a large study in health science classes.

Data gathered from 1,471 students and their teachers in grade 9 and grade 10 health science classes in Tasmania were used to determine the reliability and validity of the QTI and Attitude Scale. These quantitative data make a new contribution to learning environment research involving the QTI and will add to the data previously gained by other researchers (Brekelmans, Wubbels, & Créton, 1990; Fisher & Rickards, 1998; Khine & Fisher, 2003; Wubbels, Brekelmans, & Hooymayers, 1991).

4.2 QUESTIONNAIRE ON TEACHER INTERACTION (QTI)

4.2.1. Reliability of Student Responses to the QTI

Initially, Cronbach Alpha Reliability Coefficients (Cronbach, 1951) of student responses on the 48 items of the QTI were calculated using both the individual student and the class mean as the units of analysis. As expected, reliability estimates are higher when the class was used as the unit of analysis (Haertel, Walberg, & Hartel, 1981; Hopkins, 1982) and are shown in Table 4.1. The reliability (Cronbach Alpha Coefficient) for different QTI scales ranged from 0.61 to 0.86 when using the individual as the unit of analysis, and from 0.72 to 0.96 when using the class mean as the unit of analysis. These figures are above the 0.60 level proposed by Nunnally (1967) as acceptable levels for scales like these, when used for research purposes. These results are similar to those reported by Brekelmans, Wubbels, & Créton (1990) with the Dutch version of 77 items, Wubbels and Levy (1991) with the American version of 64 items, and Fisher, Henderson, and Fraser (1995) with the Australian version of 48 items. The reliability of the QTI with this sample of health science students was confirmed and the QTI can safely be used by teachers to receive feedback on how students perceive their interpersonal behaviour.

Another desirable characteristic of an instrument such as the QTI is that it has the capacity to differentiate between perceptions of students in different classes (Fraser, 1998b). Students in one class should perceive the environment similarly, where as different from students in another class (She & Fisher, 2002). This was explored for each scale of the QTI using a one-way ANOVA with class membership as the main effect. The results depicted in Table 4.1 show that the eta^2 statistic representing the proportion of variance explained by class membership, ranged from 0.00 to 0.03 for different scales. In this study, only four scales were deemed to differentiate significantly ($p<0.01$) between classes - the Understanding, Helping/Friendly, Student Responsibility/Freedom and Strict scales. This showed that a minimal amount of variance (1% to 3%, depending on the scale) in student perceptions was accounted for by class membership. The other scales did not differentiate between classes, leading to the conclusion that health science classes are fairly similar.

Previous research using the QTI has generally found that the *eta*^{2} statistic differentiated significantly ($p< 0.001$) between classes for all scales. For example, Fisher and Rickards (2000) found that the *eta*^{2} statistic ranged from 0.22 to 0.35 while Wubbels and Levy (1991) and Henderson, Fisher, and Fraser (2000) reported similar *eta*^{2} statistics ranging from 0.22 to 0.49 for different scales. This was not the case in this study with only four scales deemed to differentiate significantly between classes and the *eta*^{2} statistics ranging from 0.00 to 0.03.

Table 4.1
Internal Consistency (Cronbach Alpha Coefficient) and Ability to Differentiate Between Classrooms (ANOVA) for the QTI

	Alpha Reliability		ANOVA
Scale	Individual	Class Mean	(eta^2)
Leadership	.78	.94	.00
Helping/Friendly	.86	.96	.01*
Understanding	.84	.96	.01*
Student Responsibility/Freedom	.61	.72	.03**
Uncertain	.72	.88	.00
Dissatisfied	.80	.90	.00
Admonishing	.78	.92	.01
Strict	.61	.76	.01*

* $p<0.05$ ** $p<0.01$ n = 1,470 students in 75 classes

In many schools it is not uncommon to have more than one class in the gymnasium at any one time. In fact in my current school, there can be up to five classes timetabled in the gymnasium at any one time. In many regards, this provides more opportunities for the students, but in other ways it causes problems. Depending on the work being undertaken, teachers may decide to combine classes to allow students a greater choice of the unit in which they participate. For instance, one teacher may

be taking basketball, another softball and another touch football. Teachers can take their own class or the three teachers may combine classes allowing each student to select one of the sports offered. This means that students have greater choice and teachers end up taking a class that has students from all three classes.

In most Tasmanian high schools there is only one gymnasium. In times of good weather this is not a problem since different classes can use different areas, such as ovals and outdoor courts. In bad weather, classes are often limited to one main teaching space, the gymnasium. If there is only one class timetabled, there is no problem, however, if there is more than one class timetabled for the gymnasium problems can occur. In many instances, teachers will decide to combine classes within the one teaching area and share responsibilities. This means that students are taught by a teacher other then their 'normal' teacher. One teacher may take one session with the next teacher continuing on after that.

In both of the cases mentioned above, health science students could be taught by a teacher other than their timetabled teacher. The degree to which this happens depends on each individual school. Because students may be taught by more than one teacher they may have thought about their health science teachers in general, as well as their specific teacher when completing the questionnaires. This could lead to some anomalies in using the QTI to differentiate between classes.

Another method of checking the validity of the QTI instrument is to determine correlations between scales. According to the Model for Interpersonal Behaviour, scales of the QTI are arranged in a circular pattern or a circumplex model. There is overlap between scales and the correlation of each scale should be highest with the scale next to it in the model and should become lower as scales become further away with the opposite scale having the lowest correlation. This has been demonstrated in two ways in this study. First, in Table 4.2, simple correlations (r) between the scales are shown. In most cases the scales correlate positively with adjacent scales, which have similar behaviour but have negative correlations with opposite scales, which reflect opposite behaviour. For example, the Admonishing scale has a positive correlation with its adjacent scales of Strict (0.51) and Dissatisfied (0.67) and has a

negative correlation with the opposite scale of Understanding (-0.60) showing that opposite scales reflect opposite behaviour.

Table 4.2
Student Inter-Scale Correlations for QTI Using the Individual as Unit of Analysis

	LEA	HFR	UND	SRE	UNC	DIS	ADM	STR
LEA	1.00							
HFR	.72	1.00						
UND	.76	.76	1.00					
SRE	.17	.35	.27	1.00				
UNC	-.52	-.41	-.44	.22	1.00			
DIS	-.55	-.57	-.61	-.01	.58	1.00		
ADM	-.51	-.58	-.60	-.05	.55	.67	1.00	
STR	-.26	-.39	-.39	-.10	.29	.53	.51	1.00

n = 1,471

Secondly, Figure 4.1 clearly shows that the inter-scale correlations from the study reflect the circumplex nature of the QTI. For example, the Helping/Friendly scale is correlated closely and positively with the Leadership scale (0.72) and the Understanding scale (0.76). This correlation decreases with the scales as they become further away from the Helping/Friendly scale until the opposite scale of Dissatisfied has the highest negative correlation of -0.55. These results replicate those found by Goh and Fraser (1996), Scott and Fisher (2000) and Khine and Fisher (2003).

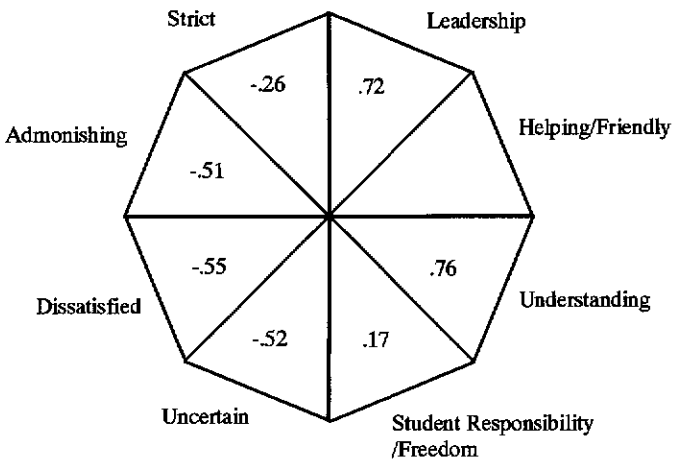


Figure 4.1. Profile of inter-scale correlations for the Helping/Friendly scale using the individual as unit of analysis.

When the circumplex nature of the QTI, and its reliability and validity are taken into account together, it suggests that the QTI can be reliably used in health science classes in Tasmania.

4.2.2 Reliability of Teacher Responses to the QTI

Responses on the 48 items of the Teacher Self QTI were calculated using the Cronbach Alpha Reliability Coefficients (Cronbach, 1951) with the individual as the units of analysis. Although the sample size (n = 37) was relatively small, the reliabilities for different scales ranged from 0.55 to 0.79 and can be seen in Table 4.3. All reliabilities were greater than 0.50 which De Vellis (1991) considered to be satisfactory.

The reliability of the Teacher Self QTI with this sample of health science teachers was confirmed and the QTI can be used by teachers to receive feedback on how they perceive their own behaviour.

Table 4.3
Internal Consistency (Cronbach Alpha Coefficient) for the Teacher Self QTI

Scale	Alpha Reliability
Leadership	.76
Helping/Friendly	.55
Understanding	.56
Student Responsibility/Freedom	.79
Uncertain	.70
Dissatisfied	.64
Admonishing	.61
Strict	.62

$n = 37$

4.3 ATTITUDE SCALES

As described in Chapter 3, the Attitude Scale was adapted for health science classes from the Test of Science-Related Attitudes (TOSRA) (Fraser, 1981a) and consisted of 8 items and that were included at the end of the QTI questionnaire. The Attitude Scale was found to have an alpha reliability of 0.87 when the individual student was used as the unit of analysis and thus shows a high level of internal consistency.

4.4 SUMMARY

One of the purposes of this study was to validate the QTI and Attitude Scale in health science classes. Through descriptive statistics, this chapter has examined the validity and reliability of the 48-item version of the QTI and the Attitude Scale in measuring student and teacher perceptions of health science teacher interpersonal behaviour.

In both cases, the instruments have shown acceptable levels of internal consistency. The circumplex nature of the QTI model was confirmed by the inter-scale correlations of the QTI with adjacent scales demonstrating high positive correlations and opposite scales showing high negative correlations. In the case of health science

classes, the QTI was unable to differentiate between classes. The reason for this may be that students in health science classes in Tasmania may be taught by more than one teacher. Further investigation into this is warranted.

In the next chapter, more quantitative results utilising data gathered from the QTI will be discussed. This includes: the perceptions of Tasmanian health science students of teacher interpersonal behaviour; how these students see health science teacher interpersonal behaviour compared with how the teachers perceive their own interpersonal behaviour; the Australian typology which best represents the average Tasmanian health science teacher; and the investigation of associations between the QTI and student outcomes, teacher experience and the sex of students. Qualitative data are presented in Chapter 6 that also support the reliability of the QTI and the Attitude Scale.

CHAPTER 5

ASSOCIATIONS BETWEEN QTI SCALES, STUDENT OUTCOMES, TEACHING EXPERIENCE AND DIFFERENCES BETWEEN PERCEPTIONS OF MALE AND FEMALE STUDENTS

5.1 INTRODUCTION

This chapter is concerned with associations between the QTI scales and other variables. The results from this study generally support previous research involving associations with the QTI such as: Brekelmans, Holvast, and van Tartwijk (1992) and Créton, Hermans, and Wubbels (1990), who investigated years of teaching experience, Brekelmans, Wubbels, and Levy (1993) and Fisher, Henderson, and Fraser (1995), who investigated attitudinal outcomes; Brekelmans, Wubbels and Créton (1990) and Rickards and Fisher (1997), who investigated cognitive outcomes; and Fisher and Rickards (1997) and Khine and Fisher (2002), who investigated differences in how male and female students perceived teacher interpersonal behaviour.

How health science students perceived teacher interpersonal behaviour is reported in this chapter. The chapter also provides an examination of the typology which best represents health science, followed by a comparison of how students perceived teacher interpersonal behaviour with how teachers perceived their own interpersonal behaviour. The associations between teacher interpersonal behaviour, student attitudinal outcomes, student cognitive outcomes and teaching experience are then explored. Finally, an investigation into the differences between how male and female students perceive teacher interpersonal behaviour is discussed.

5.2 STUDENT PERCEPTIONS OF THE INTERPERSONAL BEHAVIOUR OF HEALTH SCIENCE TEACHERS IN TASMANIA

Mean scores on each scale were examined to gain an impression of how students' perceived their health science teachers. The mean scores show that students in this study perceived their teachers displaying cooperative behaviour (leadership, helping/friendly and understanding behaviour) rather than oppositional behaviour (uncertain, dissatisfied, admonishing, and strict behaviour). Table 5.1 reports the mean scores of student perceptions of health science teacher interpersonal behaviour.

Table 5.1
Number of Items per Scale, Student Scale Means and Standard Deviations for the QTI

QTI Scale	No. of items	Scale Means	Std Dev.
Leadership	6	2.97	.64
Helping/friendly	6	3.02	.81
Understanding	6	2.89	.75
Student Responsibility/freedom	6	1.85	.61
Uncertainty	6	0.86	.67
Dissatisfied	6	1.01	.78
Admonishing	6	1.25	.80
Strict	6	1.54	.63

n = 1,471

The mean scores for the Leadership scale (2.97) and the Understanding scale (2.89) correspond to 'often' on the questionnaire, implying that health science students perceive their teachers demonstrating relatively strong leadership in the classroom. For the Helping/Friendly scale, the mean score was 3.02. This once again implies that students believe that their teachers often show helping/friendly behaviour in the health science classroom. The mean score for the Student Responsibility/Freedom

scale is 1.85 which corresponds closely to 'sometimes' on the questionnaire, thus indicating that health science students believe that although they are given some responsibility and freedom in the classroom, it is not frequent. This could reflect the need for health science teachers to be in control and to set definite boundaries, resulting in less responsibility and freedom for students due to safety reasons. Another factor to consider is the seasonal factor. The weather and season often dictate what students will be doing in class and in many ways there is little scope for giving students responsibility and freedom. For instance, during winter, most schools will try to program indoor activities. In health science classes in Tasmania, more often than not, this will include gymnastics and dance. In the warmer months, teachers will try to plan outdoor activities such as athletics, swimming and outdoor games. Although students may be given responsibility and freedom in some of these activities, at the same time they may not be. An example of this could be in a dance unit. In groups, students may be asked to develop a dance. They are given responsibility and freedom in designing, developing and choreographing their dance routine, yet they still would have to work with teacher supervision and record their progress in a diary. Some students may see this as having lots of responsibility and freedom, while others may not.

The perceptions of Tasmanian health science students indicate that they see their teachers demonstrating low levels of oppositional behaviour. This is shown by the low mean scores for the Admonishing (1.25), Dissatisfied (1.01), and Uncertain (0.86) scales. The mean for these scales relate to 'seldom' on the questionnaire, indicating that health science teachers rarely show oppositional behaviour towards their students. It is interesting to note that health science students perceived their teachers showing low to moderate levels of strictness with a mean score of 1.54.

Student scale means from Table 5.1 can be plotted on a sector profile, providing a diagrammatic representation (see Figure 5.1) of health science teacher interpersonal behaviour according to the perceptions of their students.

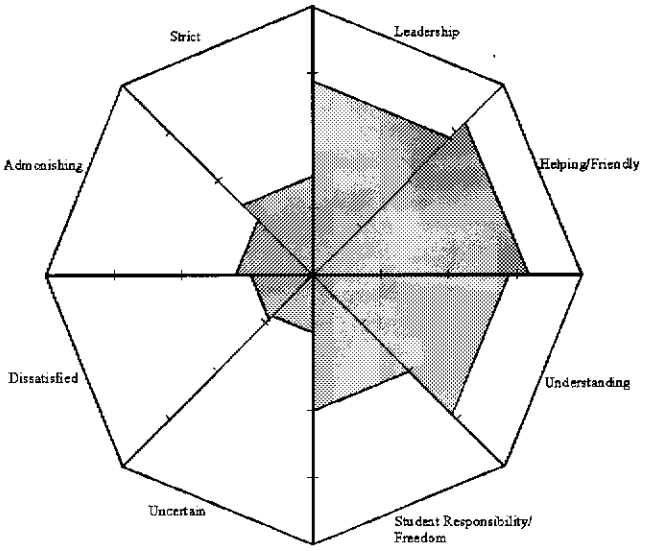


Figure 5.1. Student scale means of health science teacher interpersonal behaviour.

Overall, it appears that health science students perceive their teachers as dominant and cooperative, and displaying high levels of leadership, helping/friendly and understanding behaviour, with students allowed some responsibility and freedom. Health science teachers are seldom uncertain, and tend not to be negative towards students, since they show low levels of admonishing and dissatisfied behaviour.

5.2.1 Student Perceptions of the Interpersonal Behaviour of Three Specific Health Science Teachers

Each of the teachers in the sample was presented with the results from their classroom. For example, student perceptions of three teachers are presented in Table 5.2 and Figure 5.2.

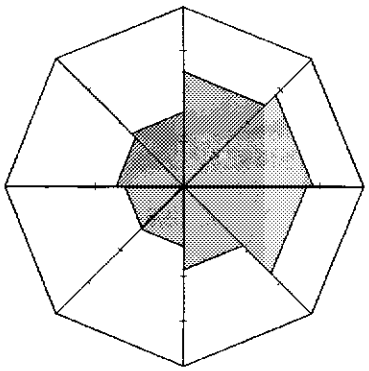
Generally, students perceived their teachers to show cooperative behaviour, however, teachers with more experience were perceived displaying more leadership, helping/friendly, and understanding behaviour and allowed students more responsibility and freedom in class. For instance, students of Teacher 1 (1 – 3 years of teaching experience) perceived their teacher as displaying moderate to high levels of leadership behaviour. Students of teacher 2 (4 – 10 years of teaching experience) also perceived their teacher as displaying moderate to high levels of leadership

behaviour. Students of Teacher 3 (more than 10 years of teaching experience) perceived the teacher to show the greatest amount of leadership behaviour, indicating that their teacher almost always displayed leadership behaviour in the classroom. Students of Teacher 2 and Teacher 3 indicated that their teachers often demonstrated helping/friendly behaviour, whereas, Teacher 1 demonstrated helping/friendly behaviour less often. All three teachers displayed moderate to high levels of understanding behaviour, with Teacher 1 showing the least and Teacher 3 the greatest amount of understanding behaviour towards students. Teacher 2 and Teacher 3 also allowed students more responsibility and freedom than did Teacher 1, although none of them gave the students much responsibility and freedom.

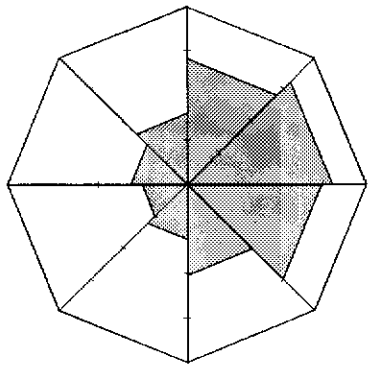
Table 5.2

Student Scale Means and Standard Deviations for Three Specific Health Science Teachers for the QTI

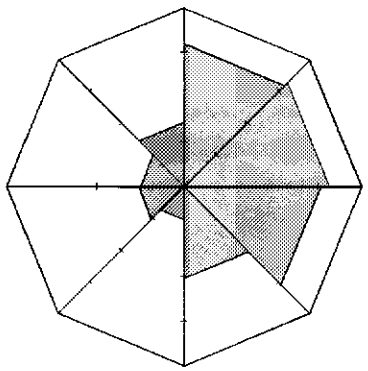
	Teacher 1 (1 – 3 years of experience)		Teacher 2 (4 – 10 years of experience)		Teacher 3 (10+ years of experience)	
QTI Scale	Mean	S.D.	Mean	S.D.	Mean	S.D.
Leadership	2.56	.81	2.81	.60	3.19	.53
Helping/Friendly	2.86	.94	3.21	.47	3.27	.63
Understanding	2.67	.96	2.97	.59	3.07	.59
Student Responsibility/Freedom	1.90	.68	2.06	.50	2.05	.66
Uncertain	1.32	.66	1.26	.70	.68	.55
Dissatisfied	1.32	.99	1.07	.65	1.11	.77
Admonishing	1.57	.78	1.29	.77	1.01	.64
Strict	1.62	.74	1.46	.48	1.41	.64



Teacher 1
(1 – 3 years of teaching experience)



Teacher 2
(4 – 10 years of teaching experience)



Teacher 3
(10+ years of teaching experience)

Figure 5.2. Student perceptions of the interpersonal behaviour of three health science teachers.

Students perceived the oppositional behaviour of experienced teachers to be less than that of inexperienced teachers. For instance, Teacher 1 and Teacher 2 occasionally demonstrated uncertain behaviour in the classroom, whereas Teacher 3 rarely displayed uncertain behaviour. Students of all three teachers perceived their teachers seldom being dissatisfied in class, they did, however, indicate that Teacher 1 was sometimes admonishing, Teacher 2 was occasionally admonishing and Teacher 3 was seldom admonishing. Students of Teacher 2 and Teacher 3 perceived their teachers as seldom demonstrating strict behaviour, whereas students of Teacher 1 indicated that their teacher displayed moderate amounts of strictness in the classroom.

5.3 COMPARISON OF STUDENT AND TEACHER PERCEPTIONS OF THE INTERPERSONAL BEHAVIOUR OF HEALTH SCIENCE TEACHERS

Teacher scale means demonstrate that health science teachers generally see themselves as cooperative rather than oppositional and more dominant than submissive. Table 5.3 reports the means of teachers' perceptions of themselves. Figure 5.3 presents the mean teacher scores from Table 5.3 in a diagrammatic form.

Table 5.3
Number of Items per Scale, Teacher Scale Means and Standard Deviations for the QTI

QTI Scale	No. of items	Scale Mean	Std Dev
Leadership	6	3.15	0.36
Helping/friendly	6	3.36	0.29
Understanding	6	3.28	0.32
Student Responsibility/freedom	6	1.74	0.59
Uncertainty	6	1.03	0.52
Dissatisfied	6	0.84	0.56
Admonishing	6	1.06	0.48
Strict	6	1.83	0.43

$n = 37$

The mean scores for the Leadership scale (3.15), Helping/Friendly scale (3.36) and the Understanding scale (3.28) are all above 3.0, which relates to 'often' in the questionnaire, indicating that health science teachers believe that they are helping, friendly and understanding leaders in their classrooms. The mean scores for the Student Responsibility/Freedom scale (1.74) and the Strict scale (1.83) both indicate that health science teachers believe that they sometimes allow students responsibility and freedom but at the same time they can be strict. The mean scores for Admonishing (1.06), Dissatisfied (0.83), and Uncertain (1.03) scales all correspond

to 'seldom' on the questionnaire, indicating that health science teachers believe that they rarely display this behaviour in their classrooms.

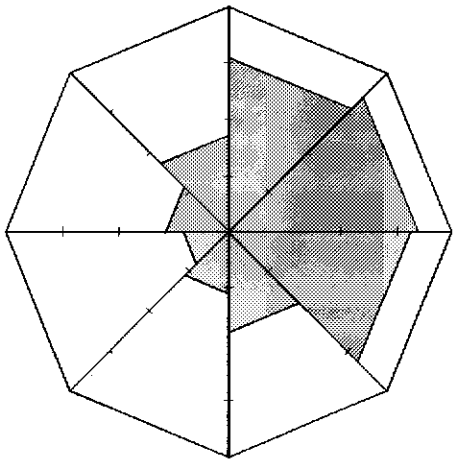


Figure 5.3. Scale means of health science teacher perceptions of their own interpersonal behaviour.

As can be seen in Table 5.4 when results from the Teacher Self QTI are compared with results from the Student QTI, it appears that teachers see themselves as displaying more leadership, helping/friendly, understanding, uncertain, and strict behaviour and less dissatisfied and admonishing behaviour compared to their students. Teachers and their students appeared to generally agree on the amount of student responsibility/freedom behaviour the teachers display.

This generally supports the results of Fisher and Rickards (1997), who concluded that teachers believe that they have higher levels of leadership, helping/friendly and understanding behaviour than their students perceived. They also suggested that teachers perceive more strictness in their own behaviour than their students do. Teachers in this study saw themselves in a more positive way than did their students. Fisher and Rickards (2000) found similar results, in that teachers tend to see themselves a little more favourably than their students. Overall, teachers saw themselves as more dominant and cooperative than students did. These differences were checked with t-tests for separate samples and none of the differences were

statistically significant. Caution is needed, however, in this interpretation due to the large discrepancy in sample size.

Table 5.4
Number of Items per Scale, Teachers Scale Means and Standard Deviations for the QTI

QTI Scale	Teachers Scale Mean $n = 37$	Students Scale Mean $n = 1,471$	Difference
Leadership	3.15	2.97	0.18
Helping/friendly	3.36	3.02	0.34
Understanding	3.28	2.89	0.39
Student Responsibility/Freedom	1.74	1.85	-0.01
Uncertainty	1.03	0.86	0.17
Dissatisfied	0.84	1.01	-0.17
Admonishing	1.06	1.25	-0.19
Strict	1.83	1.54	0.29

5.4 TYPOLOGY OF AN AVERAGE TASMANIAN HEALTH SCIENCE TEACHER

As discussed in section 2.5.2, den Brok, Rickards, and Fisher (2003) examined the most common Australian teacher profiles and through a statistical process grouped them into a typology, identifying eight main types of teacher interpersonal behaviour. If the mean profile of student perceptions of health science teachers (Figure 5.1) is compared with the typologies, then according to den Brok, Rickards, and Fisher (2003), health science teachers from this study would be labelled as Type 1 – Tolerant/Authoritative and Type 2 – Authoritative. These two typologies correspond with the Type 2 - Authoritative and Type 3 - Tolerant/Authoritative typologies as concluded by Brekelmans, Levy, and Rodriguez (1993) and Wubbels, Brekelmans, and Hooymayers (1991) in their research on typologies of teachers' interpersonal behaviour. A Type 2 Teacher is described as:

> The authoritative atmosphere is well-structured, pleasant and task orientated. Rules and procedures are clear and students don't need reminders. They are attentive.... The authoritative teacher is enthusiastic and open to students' needs. He or she takes a personal interest in them, and this comes through in the lessons. While his or her favourite method is the lecture, the authoritative teacher frequently uses other techniques. The lessons are well planned and logically structured. He or she is considered to be a good teacher by students.
>
> (Brekelmans, Levy, & Rodriguez, 1993, p. 50)

And the Tolerant/Authoritative typology is described as:

> Tolerant/authoritative teachers maintain a structure which supports student responsibility and freedom. They use a variety of methods, to which students respond well. They frequently organise their lessons around small group work. While the class environment resembles Type 2, the tolerant/authoritative teacher develops closer relationships with students. They enjoy the class and are highly involved in most lessons. Both students and teacher can occasionally be seen laughing, and there is very little need to enforce the rules. The teacher ignores minor disruptions, choosing instead to concentrate on the lesson. Students' work to reach their own and the teachers' instructional goals with little or no complaint.
>
> (Brekelmans, Levy, & Rodriguez, 1993, pp. 50)

5.5 ASSOCIATIONS BETWEEN QTI SCALES AND STUDENT ATTITUDINAL OUTCOMES

Past research into learning environments has often investigated associations between student outcomes and the classroom environment (Brekelmans, Wubbels, & Levy, 1991; Fisher, Rickards, Chiew, & Wong, 1997; She & Fisher, 2002). In order to investigate the ability of the QTI to predict student outcomes, students completed an Attitude Scale. Simple correlation analyses were used to examine the degree of association between each of the QTI scales and attitude to health science classes. The simple correlation (r) figures shown in Table 5.5 indicate that all eight scales of the QTI showed significant relationships ($p<0.01$) with student attitudinal outcomes. Furthermore, it can be seen that positive correlations occurred with the Leadership, Helping/Friendly, Understanding and Student Responsibility/Freedom scales and negative correlation occurred with the Uncertain, Dissatisfied, Admonishing and

Strict scales. That is, oppositional behaviour such as those exhibited in the Uncertain, Dissatisfied, Admonishing and Strict scales lead to poor student attitudes. Cooperative behaviour, as demonstrated in the Leadership, Helping/Friendly, Understanding and Student Responsibility/Freedom scales lead to more favourable student attitudes to health science. Koul and Fisher (2003), Fisher, Rickards, and Fraser (1996) and Créton, Hermans, and Wubbels (1990) reported similar results; cooperation scales of the Model for Interpersonal Behaviour were positively related to attitudinal outcomes and opposition scales were negatively related to attitudinal outcomes. They also found that the more a teacher displayed behaviour from the cooperation scales, the higher the attitudinal outcomes were.

Table 5.5
Association Between Attitude Scales and QTI Scales

QTI Scale	QTI Scale – Attitude Associations	
	r	β
Leadership	.51**	.26**
Helping/Friendly	.52**	.26**
Understanding	.48**	.03
Student Responsibility/Freedom	.17**	.03
Uncertain	-.29**	.00
Dissatisfied	-.38**	-.06
Admonishing	-.35**	.00
Strict	-.23**	-.01
Multiple Correlation, *R*		0.56**
R^2		0.31

* $p<0.05$ ** $p<0.01$ n = 1,456 in 75 classes

To provide a more conservative test of the association between each QTI scale and attitude, when all other QTI scales were mutually controlled, a multiple regression analysis was performed. The simple correlation (r) describes the difference between

scores on two variables, in this case these are the association between an outcome and a QTI scale; The standardised regression weight (β) characterises the association between an outcome and a particular QTI scale when all other QTI dimensions are controlled. An examination of the standardised regression (β) weights shows two out of the eight have significant relationships ($p<0.01$). That is, students had a more favourable attitude to the class when teachers exhibited more leadership and more helping/friendly behaviour. The R^2 value indicates that 31% of the variance in student attitude towards their health science lessons could be attributed to their perceptions of the interpersonal behaviour of their teachers.

5.6 ASSOCIATIONS BETWEEN QTI SCALES AND STUDENT COGNITIVE OUTCOMES

Again using the scales of the QTI as independent variables, associations were computed with the cognitive outcomes of the student. Student cognitive outcomes were measured according to the Tasmanian Qualification Authority (TQA) overall awards as discussed in section 3.4.2. Data were analysed in the same manner as for the associations between teacher interpersonal behaviour and student attitude as described in Section 5.5.

The simple correlation (r) figure shown in Table 5.6 indicates that all eight scales showed significant relationships ($p<0.01$) between a teacher's interpersonal behaviour and student cognitive outcomes. For example, the study showed a positive correlation between student cognitive outcomes and the teacher's leadership, helping/friendly and understanding behaviour. A negative correlation was observed between student cognitive outcomes and a teacher's admonishing, dissatisfied, uncertain and strict behaviour, concurring with previous research by Fisher and Rickards (1997) and She and Fisher (2002). An examination of the standardised regression (β) weights shows two out of the eight scales have significant relationships ($p<0.01$). That is, students had a more favourable cognitive outcome when teachers exhibited more leadership and helping/friendly behaviour. The R^2 value indicates that 12% of the variance in student achievement in their health

science lessons could be attributed to their perceptions of teacher interpersonal behaviours.

Table 5.6
Association Between QTI Scales and Cognitive Outcomes in Health Science Classes

QTI Scale	QTI Scale - Cognitive Outcomes Associations	
	r	β
Leadership	.29**	.12*
Helping/Friendly	.32**	.19**
Understanding	.27**	-.04
Student Responsibility/Freedom	.07**	-.01
Uncertain	-.19**	.02
Dissatisfied	-.26**	-.07
Admonishing	-.26**	-.05
Strict	-.19**	-.45
Multiple Correlation, *R*		.34**
R^2		.12

* $p<0.05$ ** $p<0.01$ n = 1,293

When comparing attitudinal and cognitive achievement, the R^2 value for student attitude was 31%, compared with an R^2 value 12% for cognitive achievements. This indicates that student perceptions of the interpersonal behaviour of their health science teachers has a greater effect on student attitudes than on student cognitive outcomes. This replicates findings in other studies by Fisher, Henderson, and Fraser (1995), Henderson, Fisher, and Fraser (2000) and Wubbels, Brekelmans, and Hooymayers (1991).

5.7 ASSOCIATIONS BETWEEN QTI SCALES AND TEACHING EXPERIENCE

Statistical analyses show that the eta^2 statistic representing the proportion of variance explained by teacher experience, ranged from 0.01 to 0.12 for different scales (Table

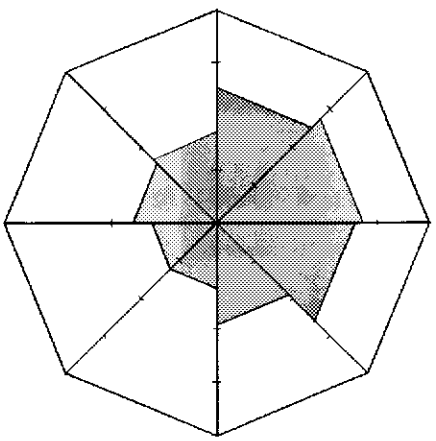
5.7). In this study, all eight scales were deemed to differentiate significantly ($p<0.01$) between years of experience of the teachers. The results depicted in Table 5.7 and shown in diagrammatic form in Figure 5.4 show that students perceived teachers with less experience to show less dominant behaviour and greater oppositional behaviour than experienced teachers. Brekelmans, Holvast, and van Tartwijk (1992) found similar results and concluded that that dominant behaviour of teachers increased with experience. Levy, Wubbels, and Brekelmans (1992) also found that students perceive beginning teachers to be less dominant than more experienced teachers.

Table 5.7
Years of Experience Mean and Standard Deviation and Ability to Differentiate Between Classrooms (ANOVA) for the QTI Scale and Attitude Scale

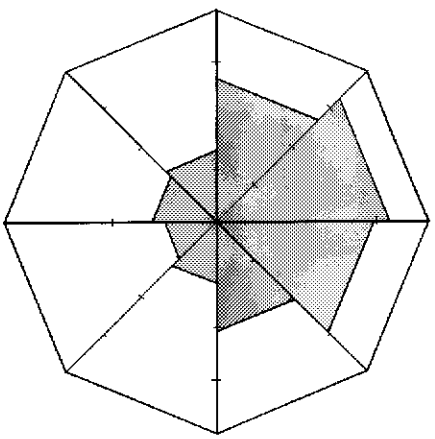
	1 – 3 years		4-10 years		10+ years		ANOVA	F
	Mean	S.D	Mean	S.D	Mean	S.D	*(eta²)*	
Leadership	2.91	.65	2.93	.57	2.98	.59	.08**	.38**
Helping/friendly	3.00	.76	3.02	.72	2.95	.70	.11**	1.48**
Understanding	2.84	.73	2.92	.68	2.84	.70	.08**	.48**
Student Res/freedom	1.82	.59	1.81	.58	1.91	.57	.09**	.00**
Uncertainty	.95	.65	.92	.64	.80	.61	.08**	.23**
Dissatisfied	1.04	.78	.95	.74	1.10	.71	.07**	.00**
Admonishing	1.31	.70	1.30	.77	1.26	.69	.12**	2.37**
Strict	1.54	.58	1.46	.60	1.65	.59	.08**	.94**
Attitude	3.70	.81	3.86	.71	3.88	.75	.01**	4.03**

** $p<0.01$ n = 37

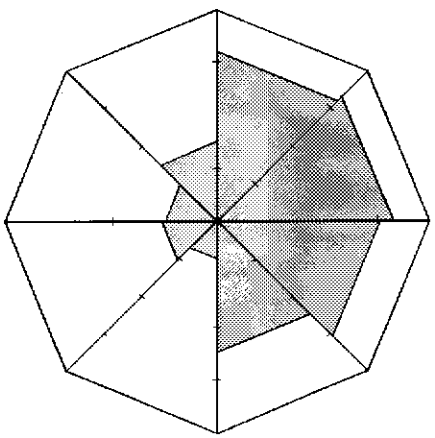
The mean scores reported in Table 5.7 also show that as health science teachers' years of experience increase, leadership behaviour increased, admonishing behaviours decreased and understanding behaviours increased and then returned to the initial level again by 10 or more years of teaching. These replicate results by Brekelmans and Créton (1993) who found that as a teacher gains experience, uncertain behaviour decreases and the amount of leadership and strict behaviours increases. They also found that from six years of teaching onwards teachers display an increase in oppositional behaviour such as more dissatisfied and admonishing behaviour and less helping/friendly and understanding behaviour.



Teacher 1
(1 – 3 years of teaching experience)



Teacher 2
(4 – 10 years of teaching experience)



Teacher 3
(10+ years of teaching experience)

Figure 5.4. Mean years of teaching experience.

5.8 COMPARISON OF MALE AND FEMALE STUDENT PERCEPTIONS OF TEACHER INTERPERSONAL BEHAVIOUR

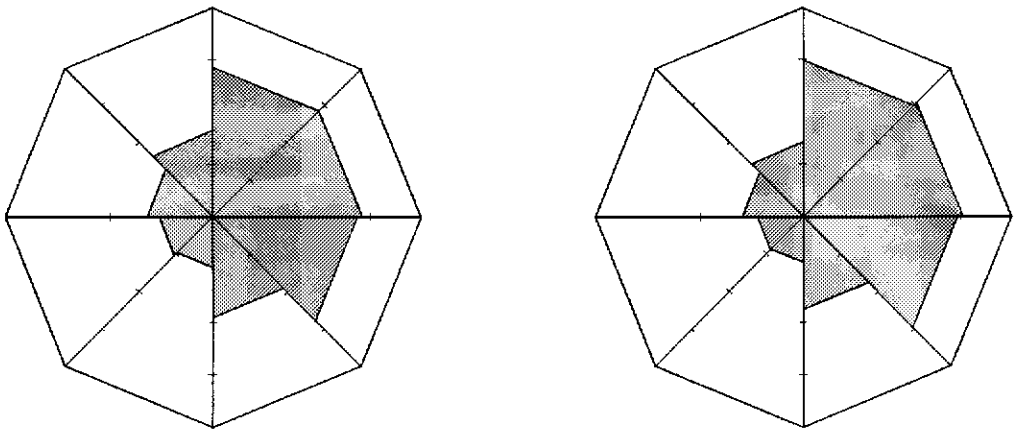
Differences in how male and female students perceive teacher interpersonal behaviour were examined using a two-way MANOVA with the eight scales of the QTI as dependent variables. Table 5.8 presents the scale means and standard deviations for male and female health science students' scores on the eight scales of the QTI, while Figure 5.5 presents the scale means in a diagrammatic form. The extent of these differences is not large. However, statistically significant gender differences were evident in eight of the eight scales of the QTI.

Table 5.8
Scale Means and Standard Deviations for Male and Female Health Science Student Scores on the Eight Scales of the QTI and the Attitude Scale

	Scale Mean		Difference	S.D.		F
Scale	Male	Female		Male	Female	
Leadership	2.95	3.00	0.05	.68	.63	7.76**
Helping/Friendly	2.94	3.07	0.13	.85	.77	10.46**
Understanding	2.83	2.93	0.10	.75	.75	7.93**
Student Resp/Freedom	1.90	1.78	-0.12	.60	.60	8.71**
Uncertain	0.91	0.79	-0.12	.67	.65	7.27**
Dissatisfied	1.13	0.92	-0.21	.79	.77	7.11**
Admonishing	1.33	1.22	-0.11	.77	.82	11.70**
Strict	1.62	1.48	-0.14	.64	.60	8.19**
Attitude	3.85	3.76	-0.09	.73	.80	8.42**

* $p<0.05$ ** $p<0.01$ Females $n = 655$, Males $n = 668$

In the Differences column of Table 5.8, a positive number indicates that female students had a higher scale mean while a negative number indicates that male students had a higher scale mean. For instance, for the scales of Leadership, Helping/Friendly and Understanding, female students had higher scale means than did male students, however, for the scales of Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict, males students had higher scale means.



Male students' scale means Female students' scale means

Figure 5.5. Male and female student scale means on the eight scales of the QTI

Female students perceived their teachers to show greater leadership, helping/friendly and understanding behaviours, while male students perceived their teachers to demonstrate more uncertain, dissatisfied, admonishing and strict behaviour and allowing greater responsibility and freedom. The magnitude of the differences is not large but it supports previous research (Fisher & Rickards, 1997; Khine & Fisher, 2003) that, overall, female students perceive their teachers in a more positive way than do male students. Comparing perceptions of male and female students using scale mean reveals that, both sexes have good attitudes to health science classes but males have a better attitude than females do.

5.9 SUMMARY

This chapter reports and interprets the results of quantitative data gathered from the QTI and a variety of outcomes. In summary, it appears that in health science classes, students see their teachers having high levels of dominant and cooperative behaviour and low levels of submissive and oppositional behaviour. Students also tend to have better attitudinal and cognitive outcomes with teachers who exhibit more leadership and helping/friendly behaviour. Less experienced teachers showed less dominant behaviour and greater oppositional behaviour than experienced teachers, and finally, female students perceived their teachers in a more positive way than male students,

however, male students had a slightly more positive attitude towards health science classes.

Chapter 6 describes the qualitative data which supports and helps explain the quantitative data analysed and discussed in this chapter.

CHAPTER 6

STUDENT COMMENTS

6.1 INTRODUCTION

The focus group interviews produced interesting data that generally supported the quantitative data reported in Chapters 3 and 4. Qualitative data were collected through the use of focus groups. Classes contributing to the focus groups were selected according to the category of the school and the years of teaching experience of their teachers. This was done to ensure that there were students from a variety of different types of schools (urban, country, et cetera) and students with teachers who were in their first year through to those with 15 or more years of teaching experience.

To allow comparisons with the QTI scales, the comments made by students are presented as they relate to the QTI scales. Due to the circumplex nature of the scales of the QTI - as discussed in Chapter 4 and as suggested by Fisher and Waldrip (1999) - the student comments have been reported using opposite scales together.

In the focus group interviews reported in this chapter 'M' before a quote indicates a male was speaking, 'F' a female and 'R' the researcher.

6.2 INTERPERSONAL BEHAVIOUR OF HEALTH SCIENCE TEACHERS IN TASMANIA

6.2.1 Leadership and Uncertainty

The Leadership and Uncertain scales are designed to measure the degree to which teachers know what they are doing in the classroom. In this study, students indicated that their teachers generally show leadership to a relatively high degree. Students also indicated that their teachers appear to be experienced in leadership and demonstrate this leadership from when they first meet their students. The comments below support this assertion.

> *M: Um, well Mr J. really has an idea of what's going on, he's been around the block a couple of times, he knows the drill. I'm impressed by him.*
>
> *F: He's got very nice.*
>
> *M: He takes charge...*
>
> *M: Right from the start, from grade 7, to get a lot of respect from students.*

The comments from a male student below indicate that he believed the main thing a teacher needed to do was to be a leader in the class and have control over it.

> *M: Um she's a nice person to get down and joke with. She's a good teacher, got a bit of control over the class. Suppose that's enough.*

Some students saw their teachers as guiding them rather than actually leading, although, as indicated by the discussion below, even then, students still indicated that their teachers took on leadership roles. The comments below reflect that although they saw their teacher as a leader, they also saw her as a person who assists and guides them. This is an excellent example of the circumplex nature of the QTI where the Leadership scale and the Helping/Friendly scale are overlapping and intertwined.

M: Not so much a leader

F: Not a leader, but

F: Guider.

R: Guider?

M: She lets us be our own leader. Like we said before, she lets us make our own decisions.

F: And she's probably different to different grades, we're grade 10 and she expects us to be able to lead.

F: Lead our own, what we want to do. She'll just say this is what we're doing in the lesson.

M: And she'll guide you to let you know if you've made the right decision.

M: And show you what to do, so I guess although we see her as a guider, in many ways she is still leading us, just not in such an obvious fashion.

Although students indicated that there were times when their teachers were uncertain, they also believed that when needed, their teachers showed leadership and that this leadership was connected to safety. The students involved in the conversation below had an inexperienced, young teacher who they saw as a friend and as a teacher. It is interesting to note that students were happy to have responsibility and freedom but they believed that the teacher needs to take control when something goes wrong and they respect her for those actions. At the same time, one student expects this to happen without the teacher dominating the class.

M: We know that she's the leader but at the same time she acts as part of the class.

M: She's also willing to give us responsibility and leadership.

Group: General agreement.

R: And you obviously like that.

Group: More murmurings of yes.

M: She's part of the class until something goes wrong and then she speaks up and we respect her.

M: She just needs more skill in dealing with us without being overbearing.

F: She's like maybe our big sister or best friend, like for the class that everyone looks up to. I think, our role model.

The conversation described below is another example of the circumplex nature of the QTI. In this instance, the scales of Uncertain and Student Responsibility/Freedom are overlapping; students see the responsibility and freedom they were given by the teacher also as being uncertain behaviour on the part of the teacher.

F: She gives you options.

R: Options?

F: Might not be sure. She might be a bit unorganised about what she wants to do for sports so she just says you can do this or this or this and it's your choice what you want to do.

M: She'll supervise you.

F: Even when we have options there are still some restrictions. In that it's not a free for all.

F: It's pretty much a compromise where we come to a sort of deal where everyone's happy.

M: It's not like we can say we want to go for a long distance run and just go and do it. She draws a line.

As can be seen from the comments above, students generally saw their teachers as leaders, although at times they indicated that their teachers were uncertain. Students did, however, indicate that even when they perceived their teachers as being uncertain, they still recognised that their teachers were in control of the class. It appears that if the circumplex nature of the QTI is taken into account, then students see an overlap between the scales of Leadership, Helping/Friendly, Uncertain and Student Responsibility/Freedom.

6.2.2 Helping/Friendly and Dissatisfied

The Helping/Friendly scales are designed to measure the extent to which teachers demonstrate pleasant and open behaviour towards their students. The Dissatisfied scale measures the degree to which teachers display dissatisfaction and question or criticise students. Demonstrated in the student statements below, the focus groups indicated that they saw the need for the teacher to show respect towards them in order for the students to respect their teachers. Students are more likely to behave well in the class of a teacher they respect. They are more likely to talk to teachers who they believe respect them and whom they respect in return.

M: If the teacher has respect for you than you can have respect for them.

R: So why would you approach Mrs B. and Mr H. but not the others?

M: They have got a lot of respect for everyone. They really know what's going on. They're alert and they can help you.

M: Because we do, we respect her as a teacher.

M: Yeah she's fair to us.

M: Yeah she respects us and we respect her. So we don't do anything naughty or if she asks us to do something we do it.

It also became apparent that students like to trust their teacher, to be able to talk to their teacher, and to feel that they are important. As can be seen in the comments below, the students indicated that their health science teachers do these things in a number of ways such as; knowing their names, saying hello in school corridors, and helping them in extra-curricular activities. Students seem to appreciate health science teachers because they believe that they 'go that extra mile' by being involved with sports teams, by showing interest in students' personal lives, and by running errands for students when needed.

M: He gets to know people.

M: I mean a lot of the PE teachers that have a really good bond, will know your name. And when they walk past you in the corridor they go "oh hi". They really acknowledge you.

M: Our teacher goes out of her way for us.

Group: Yep.

R: So why do you think that?

F: Well if we have a problem and we tell her, she's going to bring it up like at a staff meeting or something like that and try to get things sorted out for us.

M: For example, yesterday what happened was for a fundraiser we weren't let out in time so she went down to the shop and got all the stuff for us.

M: She came round for us....(mumbles)

M: She keeps on asking me about my motorbike and trail riding on the weekend...

F: We talk to her about personal problems and trust her not to tell people.

M: Mr W. takes my football team for training after school and comes to the games. He has young children and sometimes has to bring them. It means a lot to us.

F: Mrs T also takes our soccer team, they give up a lot of their own time.

Students rarely talked about their teachers as dissatisfied, comments such as the ones above indicated that health science students saw their teachers as having high levels of helping/friendly behaviour and low levels of dissatisfied behaviour, supporting the quantitative results discussed in earlier chapters.

6.2.3 Understanding and Admonishing

The quantitative results from this study indicated that students in health science classes saw their teachers showing high levels of understanding behaviour, and low levels of admonishing behaviour. Student comments during the focus group interviews supported the quantitative data with students focusing on their teachers' understanding rather then their admonishing behaviour. The comments below reflect the students' need to talk to their health science teachers, as well as needing to feel that what they say is respected and understood. As discussed earlier in this chapter, students believe that it is important that they know their teachers and that their teacher knows them as a person, not just as a student.

M: Mr S. and Mrs H. were generally the nicer teachers. They understand your problems and stuff.

F: It's easier to talk to them than Mr Q.

R: So why is that do you think?

F: They always refer to their children (mumbles).

M: They understand us, know how to relate.

M: Um, only with a lot of respect.

M: Yeah, they try to get to know you.

R: So getting to know you is important?

M: With the same thing, they expect a lot of you.

In the conversation below, students also indicated that they expect that anything they say to their health science teacher will remain confidential. It shows that students are able to share their concerns with their health science teacher and that they feel that their health science teachers are understanding, trustworthy and positive in their responses to students.

M: Like I've talked to her about my problems, just without anyone else knowing and she's just kept that to herself.

M: And the reason we can do that is because she's shared her problems with us as well.

M: She's um, as well as sharing problems she'll talk to you about good things in life as well, like she'll talk to you about...

M: She'll try to make you feel better. Which is good.

R: So it's the positives and the negatives. It's the whole thing, not just...

F: So if you're going really down, this happened to me and this happened to me. She goes oh think about this and think about that and you know don't worry about that.

B: She'll tell you a funny story and that.

M: Yeah and it'll just make you laugh.

F: It might not have anything to do with what you're thinking about, but...

M: She's basically like a best friend.

As can be seen from the comment below, students recognised that their health science teachers were admonishing, but indicated that this was the exception rather than the norm. Student comments tend to reflect that their health science teachers generally have a sense of humour and that the students feel that on the whole they have good relationships with their health science teachers.

F: I think most of the class gets on with her quite well because she's easy to get along with at times, she seems to understand us. Most times. Like sometimes she can be a bit moody. Everyone has their days. She's very friendly, has a sense of humour like you can have a joke with her and she won't get crabby. We do a lot of fun things and it's really good. I like the way she teaches. I suppose that's one thing that really benefits all the things...we have... our relationship with our teachers.

The quantitative results discussed in Chapter 3 and 4 and the qualitative results of the focus groups support each other and show that health science students generally see their teachers showing high levels of understanding and low levels of admonishing behaviour.

6.2.4 Student Responsibility/Freedom and Strictness

It is interesting to note that the results from the use of the QTI suggest that students see their health science teachers demonstrating moderate levels on the Student Responsibility/Freedom scale and low to moderate levels on the Strict scale. Yet, comments from students indicate that overall they believe that they have a large amount of responsibility and freedom in class. The comments also reflect that students recognise that the teacher is aiming to give responsibility and freedom to the students. Rather than a lack of strict behaviour from the teacher, she is in fact showing leadership behaviour in allowing students to have control of the class.

> *G: Lots, we have to take control of the class.*
>
> *M: We have to organise all our own games, like recreation sports and all that. We have to organise our own teams.*
>
> *F: The class we just had there... a group of girls were taking our class for basketball.*
>
> *R: And so then they were umpiring?*
>
> *F: So she was really just a supervisor rather than a teacher.*
>
> *Group: Yeah.*
>
> *M: It's what this class is about really.*
>
> *F: She wants us to learn how to umpire and we don't just sit off when we're not playing.*

Although students see their teachers allowing them responsibility and freedom, students also recognised the need for their teacher to remain in control over the class at these times. The comments below reflect student understanding of the need for the teacher to be strict so that safety is maintained in the classroom. Once again, those comments reflect the circumplex nature of the QTI scales, while seeing their teachers demonstrating strict behaviour, students also see it in terms of a teacher's leadership. Thus, when a teacher is displaying dominant behaviour, they are in fact being strict and showing leadership at the same time.

F: In Health Science anything can happen. Like in the classroom if you can't control them the worst they can do is run around the classroom and throw some chairs or something. In this class we've got like equipment that can be dangerous.

M: But there's fights now. People bash each other up when they're in games. People push and shove. Imagine if a teacher couldn't stop that!

F: And it gets more physical you know.

M: It's just a safety danger thing.

M: Mr K. stops it but imagine if somebody...

Student comments reflect that they like having input into lessons. Their comments also show that students behave better in classes where they are allowed input into the lessons and given responsibility and freedom.

F: As our age group we all get some input type thing, but they're always the leaders and tell us when to stop and all that. But they give us a free rein which is good.

M: Students should get that at our age.

F: I think that's another thing. We all behave better in PE than we do in other classes because we're given more freedom in PE.

Health science teachers give their students freedom, but with that freedom comes student responsibility such as: being on time, umpiring and organising equipment. Student comments reflect that although they have freedom in class, their teacher still demonstrates strict behaviour by making sure that there are consequences for negative behaviour like being late, unorganised or demonstrating poor sportsmanship.

F: Nowadays, we get to choose our sports ball and we get to choose what sport we do. Like we get put into classes and we pick the sport.

M: That's like with our athletics units we got to pick what...

F: If you don't get to the event on time there were consequences.

F: We got points.

M: Yeah we lost points for our... I mean we got points. Because the team that's got the lowest points wins.

As the comment below demonstrates, some students indicated that they did not like the freedom given in class, believing that when umpiring the teacher is less biased than other students. When, however, compared with grade 7 lessons, where students are given less responsibility and freedom, students indicate that they prefer health science classes in grade 9 and 10.

M: But it's bad in a way, students umpiring. Teachers should do it. Because... umpires make a lot of conflict and you can shout at the ref cause he's just blown the whistle for his friend.

F: Which we're enjoying heaps more than grade 7 when we were told what we had to do all of the time.

The focus group interviews indicated that students believed that they had a greater amount of responsibility and freedom than indicated by the quantitative data. Students also believed that their teachers demonstrate strict behaviour when required. Students also tend to see their teachers' strict behaviour closely related to their leadership behaviour.

6.3 ASSOCIATIONS BETWEEN STUDENT PERCEPTIONS OF TEACHER INTERPERSONAL BEHAVIOUR AND TEACHING EXPERIENCE

From the focus group interviews there were three main areas of a teacher's interpersonal behaviour that were highlighted. First, students see teachers with more experience as more dominant. Secondly, students see younger teachers who usually have less experience as closer to their age, and therefore, they can relate to them as a peer and as a teacher. This generally supports the quantitative data gathered in this study as well as previous research in this area by Brekelmans, Holvast, and Van Tartwijk (1992) and Levy, Wubbels, and Brekelmans (1992).

Student comments show that they see experienced teachers as more dominant than less experienced teachers. Students are also more likely to challenge a less experienced teacher as they see them as less knowledgeable or less confident.

> *M: Like with less experienced teacher he's not like he has to have control. If* experienced teacher *says something you don't tend to argue as much cause you know she's been there, done it and she knows all about it.*
>
> *F: She's more knowledgeable.*
>
> *M: Yeh.*
>
> *M: And that she's also more certain about what she says.*
>
> *F: About what she says and what she does.*
>
> *M: I don't know. You don't tend to argue with them* (experienced teachers) *as much.*

As can be seen below, student comments reflect that students perceive experienced teachers showing greater leadership, helping/friendly and understanding behaviour than less experienced teachers. Students see their experienced teacher knowing them better and taking on greater leadership roles than less experienced teachers.

> *F: Experienced teacher does most of the PE stuff.*
>
> *R: So why do you think that is?*
>
> *M: More experience.*
>
> *F: Experienced teacher is probably a better PE teacher (mumbles) and experienced teacher is used to all us and knows what we're like. Less experienced teacher is younger and probably not as experienced to start off with.*

Comments by students reflect that students saw less experienced teachers as less dominant and showing more submissive behaviours, although less experienced teachers use new activities. Less experienced teachers were also perceived as less confident and not knowing as much, therefore allowing students to get away with more negative behaviour than experienced teachers.

F: I think with inexperienced ones, one they lack confidence with telling us what to do. So you know we can get away with a bit more. But they've normally got more original ideas. But our PE teachers, they're all pretty cool. Like we all do pretty cool stuff.

M: The new teacher does get I suppose, um...

F: Broken in by all the kids.

M: Yeah, in a nutshell, because he kind of gets... he doesn't know the drill.

F: And so we see how far we can get away with stuff.

M: Yeah, you push them to their limit and then finally they'll snap. And they'll think oh hang on this ain't supposed to happen.

F: Yeah.

F: And then as soon as they snap you know you all behave again.

M: Yeah exactly.

Students recognise that teacher dominance increases with experience and that a teacher can be a good teacher without being dominant and experienced as is indicated below.

M: He's more laid back.

F: I think his dominance will improve as he gets older and more experienced, he's just a bit quieter. He's a good teacher, a great teacher, but not all teachers have to be really loud.

Although students perceived less experienced teachers as being less dominant than more experienced teachers, one group of students also perceived their less experienced teacher trying to be dominant. The teacher's behaviour, however, as the students saw it, was more oppositional whereas an experienced teacher's behaviour while being dominant, was co-operative as well. This is reflected in the comment below.

M: You get old people like that that are joking around and you get younger people that are mean as well. I reckon that the older people are sort of way more disciplined.

One of the reasons that students in this study saw their less experienced teachers as less dominant was due to the close ages of students and teachers. The students indicated that they feel that they related better to younger teachers and saw them as more of a role model than older teachers. Students' comments below indicate that students therefore are identifying with younger teachers not just as teachers, but also as peers.

M: I suppose you could have more of a joke with more of the younger teachers because you can sort of relate to them.

M: He's still older but he's more our age. Like close to a role model kind of thing.

S: Why do you think then that experienced teacher *pulls you up for swearing whereas* less experienced teacher *might not?*

M: Because he's younger.

M: I suppose he does the same stuff you do in life.

Some students believe that less experienced teachers try to make friends with their students because they want the students to be nice to them. Whereas, more experienced teachers have more confidence, they know students and so they can be more strict or more admonishing.

M: When teachers start out they try to make friends, like they try to be nice to all the students so they'll be nice to them. Whereas all of the older teachers already know you and just...can be a bit meaner.

Overall, student comments reflect similar results to the quantitative data in that students generally see experienced teachers as being more dominant and that students often feel a greater personal connection to less experienced teachers because they are closer in age.

6.4 COMPARISON OF MALE AND FEMALE STUDENTS PERCEPTIONS OF TEACHER INTERPERSONAL BEHAVIOUR

The focus group interviews did not provide as much information about the associations between teacher interpersonal behaviour and sex of students as was hoped. As reflected in the comment below, students tended to interpret the focus group questions in terms of how the teacher treated different sexes rather than how the different sexes saw their teacher.

F: He doesn't judge people.

R: Can you give me an example?

F: He treats everyone fairly. He treats the girls the same as the boys.

R: Do you boys agree with that?

M: Nods

Students also interpreted the interview questions in terms of teachers being sexist or not as is demonstrated in the comment below. One comment reflects that some male students believed that they could do what they liked in the female teacher's class, but quickly discovered that they could not.

F: That we all see her around the same way again apart from a couple of the naughty boys.

M: She's not sexist.

F: No she's not sexist at all.

M: I think some boys think they can walk over her because she's a girl but they soon find out they can't.

The two comments below reflect that students believed that differences in teacher interpersonal behaviour were probably due more to the participation levels of students than to the sex of the students.

> *F: I reckon that it's not really a boy/girl thing it's more like the people who want to do like, are interested and want to do sport than the people who just want to sit there and do nothing. Cause like to me, Ms Y has got all the time in the world for people that want to do stuff and actually achieve something.*

> *F: Her interaction with all the people in the class are equal and people actually will participate and do things is great because there's no-one really that she has to yell at. And some of the non-participants like they know their job is to set up, and rosters, and score, and time and all that. So it is, it's a really friendly class.*

It also appears that students feel that teacher interpersonal behaviour is related to student sex in terms of female students relating more to female teachers and male students relating more to male teachers can be seen in the quotes below. Comments also reflect that interpersonal behaviour between the teacher and students is an important aspect of a student's enjoyment of the class.

> *F: I don't know what it is but the girls don't get close to him like they probably had a better PE lesson, like relationship with their female teacher last year.*

> *F: The male teachers' joke around with the boys more because they treat them more like friends. Where the girls will always stand back.*
>
> *M: Or in Ozzie language, mates.*
>
> *F: Yeah. So the guys will go up and go how you doing and touch them but they won't touch us. I mean I suppose it's good in some ways, we don't want to be groped. But I mean we don't have herpes or anything. We can be touched, patted on the back and all that.*

Comments from students below also show that a common interest such as football enables students to feel closer to their teachers.

M: Well I've got a stronger relationship to Mr X than most of the girls in the class.

R: Right so why is that do you think?

M: I don't know. It's just... we talk football.

R: Talk football. What about the girls? Do you talk football with Mr X?

Group: General no's.

During the interviews male and female students indicated that they basically see their teachers the same and that sex differences are based more on female students getting on better with female teachers and male students with male teachers. Students found it hard to differentiate between how the teacher treated different sexes compared with how male and female students saw their teacher.

6.5 SUMMARY

The focus group interviews generally supported the quantitative results and helped to provide greater depth and understanding into what health science students feel about teacher interpersonal behaviour.

Generally, student comments suggested that students saw their teachers displaying:

- high to moderate levels of leadership and low levels of uncertain behaviour;
- high to moderate levels of helping/friendly behaviour and low dissatisfaction;
- high levels of understanding and low levels of admonishing behaviour; and
- moderate student responsibility/freedom and low to moderate strictness.

The discussion from the focus group interviews also reinforced the quantitative data concerning teacher experience and how male and female students perceived teacher interpersonal behaviour.

The next chapter contains a reflective narrative by the researcher. It brings together the quantitative and qualitative results of this study with the personal experiences and professional reasoning of the researcher to examine the similarities between the results from this study with the researcher's own experiences as a health science teacher.

CHAPTER 7

A REFLECTIVE NARRATIVE

7.1 INTRODUCTION

Chapter 7 adds to the results of this study by acknowledging the personal experiences and professional reasoning of the researcher. This chapter highlights the similarities of the results from this study with the researcher's experience as a health science teacher. It also completes a triangulation of research with three sources of data: questionnaires, interviews and the researcher.

7.2 A HEALTH SCIENCE TEACHER

As a health science teacher, one of the questions I frequently ask myself is: What type of relationships do I want to have with students and how can I best achieve these? Good and Brophy (1991) indicated that teachers in secondary schools may have interactions with 150 different students a day. In fact, when I first started teaching as a primary itinerant teacher I taught between eight and nine classes a day, only seeing each student once a week for half an hour, totalling 220 students a day or over 1,000 students a week. How is it possible to form meaningful relationships with that many students? As a secondary teacher I see far less students, first of all I only see a maximum of five classes a day, on some days I only see three classes, and the majority of those classes I see more than once a week. This means that I am now teaching approximately 250 students a week. Some of the questions I frequently ask myself are: What type of relationships do I have with my students? What type of relationships do I want with my students? How can I improve on these relationships?

Quantitative results using the QTI and qualitative results of student comments indicate that health science teachers in this study are generally dominant and cooperative, showing high levels of leadership, helping/friendly, and understanding behaviour and moderate levels of student responsibility/freedom. A typical example of this is an activity I enjoy taking which I call the 'Nuclear Swamp'. In this activity, students are divided into teams of approximately seven, using 'stepping stones' made out of paper. Teams must cross from one side of the gym to the other without touching the ground and with someone always touching the stepping stones. This activity involves a great deal of leadership from me, to organise students into teams and then explain the activity. After that students are given responsibility and freedom to work as a team and discover how they can get across the 'Nuclear Swamp'. If set up properly this activity provides me with the opportunity to laugh and joke with students, and any strict or uncertain behaviours displayed by me are with a smile. At the end of this type of lesson, I have not heard a negative comment from any student, in fact, only positive comments have been made. When another health science class enters the gym later in the week talking about the 'Nuclear Swamp', then I conclude that students from the previous lessons have had a good time.

The 'Nuclear Swamp' activity is an excellent example of an activity where the teacher shows high dominant and cooperative behaviour, such as those discussed by Fisher, Rickards, Chiew, and Wong (1997) and associated with increased student attitude scores. Kessler (2000) describes a similar situation where a class and a teacher are taking part in an outdoor challenge activity, the 'Nitro Crossing'. In this challenge, the group are all on one side of a river. By using a swinging rope, the aim is to get the whole group across to the other side of the river without anyone getting 'injured or killed'. Group work, trust, communication and supporting others are required to complete the 'Nitro Crossing'. Kessler (2000) talks about a bridge of trust and affection, which develops between the teacher and a student that had never happened in the classroom at school. In many respects this is what can happen in health science. It is great to see the excitement and happiness on a student's face after they do a somersault on the trampoline for the first time or when a team completes a dig, set, spike sequence in a game of volleyball. In both situations, the

opportunity for building a positive relationship is high, especially if the teacher and the student have been working together towards acquiring the skills.

Health science students' perceived that their teachers rarely display uncertain behaviour. Health science teachers, however, indicated that they believe they show more uncertain behaviours than their students indicated. At times, when I have felt uncomfortable in a teaching situation, I have displayed uncertain behaviour. When I first went to one of my schools, all the students from two classes would sit on benches in one straight line for attendance checking and the introduction to the lesson. In most instances, this involved 55 or more students. This is the way it had been done before I started there and it continued in this manner until the teacher who was there when I arrived eventually left the school. After he left, I changed the position of the class in relation to me. Instead of being in a long line on benches, the students would sit in a group in front of me. My class would come to me and the other class would go to their teacher. Van Tartwijk, Brekelmans, Wubbels, Fisher, and Fraser (1998) argue that student perceptions of teacher interpersonal behaviour is primarily formed when the teacher is in front of the whole class, and at this time, a working climate is created which is consistent over the year. I felt more comfortable with my class in a group, closer to me, to enable better communication and interpersonal behaviour. For my students, sitting in a group is a time for communication between us. When this happens the need for discipline is almost non-existent where as if a class is spread out around the gym, then it is harder to interact and communicate. When the class is sitting in a group in front of me rather than a line, I feel that I show less uncertain behaviour and I am able to show more leadership, helping/friendly and understanding behaviour.

The characteristics of the teacher affects the working social environment of the classroom which in turn influences students, and this atmosphere provides the stage for learning (Tonelson, 1981). When I go to a class angry, tired or despondent, students pick up on how I am feeling and this can affect the atmosphere of the class. It is the same when interacting with students; if I am intolerant, then they will be intolerant, whereas, if I express positive feelings and positive interpersonal behaviour, students are more likely to interact with me in a positive manner. Further to this, Chidolue (1996) found that teacher attitude, and student attitude and

achievement were closely related. This means that teachers who have a negative attitude towards their subject can pass on this attitude to young students. This is a concern. For instance, I know that I do not like Aussie Rules Football as much as other activities. I do not feel as confident in my abilities as a teacher, thus I am sure that students are not gaining as much out of Aussie Rules Football units as they could. The reverse, however, could be true. In a recent volleyball unit, students were not overly enthusiastic about it. They lacked the skills and had little knowledge of the game. By the end of the unit, they were having a great time. I really enjoy volleyball and know that I got more involved in the unit and I had more control and higher expectations than in the Aussie Rules Football unit. This experience supports the quantitative results from this study as well as research by Koul and Fisher (2003), Fisher, Rickards, and Fraser (1996) and Créton, Hermans, and Wubbels (1990). When I display less dissatisfied and uncertain behaviour in the volleyball unit compared with the Aussie Rules unit, students generally seem to have more favourable attitudes.

In fact, depending on the type of school in which a teacher is teaching, a teacher's behaviour may be influenced one way or another. For example, it was not until I was teaching in a school classed as 'hard to staff' that I feel that I learnt the most about my relationships with students. It was at this time that I really recognised the importance of helping/friendly behaviour. I believe that this is due to a number of factors. First, when I went to this school, I had been teaching long enough so I was more concerned with the students themselves than with being liked by them. Secondly, it was probably the first time I had been at a school where students would argue back, not just a little bit, but a lot. I soon learnt that if I wanted to have good relationships with them then I was going to have to adapt what I had done before. One of the most basic actions I took was to say hello to as many students as possible in the school corridors, especially to students who I felt were potential problems. By doing this I was trying to show more helping/friendly behaviour towards them. I found that this was a very successful way to get to know students as well as making them feel like they knew me a little bit too. One student who used to come to class, and who was disruptive and rarely smiled, actually began to say hi to me in the corridors. I saw this as a major achievement. In the focus group interviews, students

indicated that they believed a teacher saying hello in the classroom and in corridors to be a good example of helping/friendly behaviour.

Watzlawick, Beavin and Jackson (1967) refer to the Systems Perspective on classroom communication. If one relates this to the incident above, a positive spiral of interpersonal behaviour developed by me smiling and saying hello to students in the corridor they in turn began to do the same thing to me. Of course the reverse of this could be true. For instance, a number of times in that school, I would find myself in heated discussions or arguments with a student. In this instance, Goleman (1996) believes that the core of handling relationships is being able to manage emotions in others. He also believes that emotions are contagious; we catch and transmit moods from each other. It is also the person who is more forceful in expressing feelings that transmits emotions to the one who is more passive. I would feel myself losing my temper and the student in turn would reciprocate. If this situation escalated, then more often than not, the student would end up getting really angry and would demonstrate totally inappropriate behaviour. It was only with experience and confidence in myself that I learnt how to deal with this type of situation in a more effective manner. One way to recognise that a situation was developing and being able to say to the student "I am getting a bit angry and upset, I need some time to calm down. Can we go away from each other for a couple of minutes and then talk about this later"? I found that most of the time students responded to this. I was being the one who broke the cycle, my behaviour changed from oppositional to cooperative, so the student didn't feel like he or she was backing down. We would go away and come back a little while later, able to discuss the incident in a more rational manner.

Rosenholtz, Bassler, and Hoover-Dempsey (1986) believe that teachers need to develop appropriate interpersonal behaviour as an important means of decreasing discipline problems. This appropriate interpersonal behaviour needs to be as consistent as possible. Students are very good at noting "You let Jack do that, why can't I"? In the example above, I was initially showing admonishing behaviour towards the student, however, after the incident was over, my behaviour had changed to become one that showed greater leadership and understanding, which is the behaviour students indicated is typical of health science teachers.

Hickey (1995) believes that one of the ideologies underpinning health science is that friendship, team work, sharing and cooperation are outcomes of involvement in physical education and sport. Fitzclarence and Hickey (1999) indicate that many young people take part in physical activity to feel part of a team, for friendship and interpersonal bonding. This is one of the reasons I enjoy teaching health science. It allows a large variety of relationships to take place in a culture other than the typical classroom of desks and chairs. Although there is still culture in the health science classroom, there is also the opportunity to interact with students at all levels. Playing sport seems to break down barriers and enable people to get to know each other better than in a typical desk and chairs classroom. In fact, with the introduction of the sports education unit as discussed in Chapter 2, students take on greater responsibility in the classroom, giving the teacher time to relate with students on a more personal level. Even when I am umpiring games, students will often come over to talk to me. This allows the students and I to have private conversations away from others. When I am talking, it is even better if the game continues with the participants umpiring themselves or another student offering to take over the role of umpire. In a recent sports education unit of netball, when I was umpiring, a student named Jane approached me and indicated that she wanted to talk. It is very hard to umpire and talk to students at the same time, since your focus and concentration is divided between the game and the conversation. Thus, neither is done particularly well. In this case, I was very pleased to find that other students had noted that Jane and I wanted to talk, and, they came over and offered to umpire. To me, this is what sports education and health science is all about. I was able to show helping/friendly and understanding behaviour towards Jane by listening and discussing her problem with her while other students were able to gain experience in responsibility and leadership. Once again, this story is a good example of dominant and cooperative behaviour within a health science classroom.

Quantitative results indicated that students perceive that they have low to moderate amounts of responsibility and freedom in class; focus group interviews, however, indicated that students believe they have moderate to high amounts of responsibility and freedom. As a teacher, to allow students to have responsibility and freedom, I must first show leadership and give clear and consistent instructions. Tjeerdsma

(1997) believes clear communication between teachers and students is important to the teaching/learning process. In health science clear instructions are important, if you have 25 people in your class and you want each of them to get a basketball and line up on a line, then instructions need to be clear. For instance, if I said to a class "Get a basketball each, and line up on the line", there is potential for disruptions. Students will get their basketballs, then they will bounce them, some will go to the baskets to take a shot, some will ask which line and so on. In fact, my instructions need to be a lot clearer. For example, "Get a basketball, without bouncing it, come and line up on the blue line I am standing on, facing the stage". With just a few more simple instructions, the lesson will be able to go on quicker and will be less hectic and confused. In some cases, if instructions are not clear, then you may well be talking about the safety of a student. In one gymnastics lesson the students and myself were putting out the gymnastics gear. This involves setting up a trampoline, two trampettes, a balance beam and climbing bars. At the beginning of the gymnastics unit, I spend a great deal of time going over routines and safety. Often I am open to negotiation, but in this instance there is none, there is a set procedure for setting up gymnastics equipment and instructions regarding this are repeated at the beginning of every lesson. Yet, despite my best efforts, I found a student trying to set up the trampoline without me. The result was my extreme anger and I began yelling across the gym. All heads turned first to me then in the direction of the trampoline, silence prevailed. In this case, I had to show dominant and oppositional behaviour because the safety of the student is paramount. Once the equipment has been set up in the correct manner and checked by me, I then feel that I can give the students some responsibility and freedom. The students are allowed to practise the skills they want to, but under a set of predetermined rules. The quantitative results for this study indicate that students perceive their teachers to show low levels of strict behaviour and allow moderate amounts of student responsibility and freedom.

In the gymnastics lesson as described above, I needed to be strict throughout the lesson due to safety, but at the same time I could allow students the opportunity of freedom to practise and extend their gymnastics skills. Students in the focus groups appeared to recognise the need for this and saw a teacher's strictness as having two layers, one for safety which they connected to leadership and another, which was

related to the Strict and Student Responsibility/Freedom scales of the Model for Interpersonal Behaviour.

7.2.1 Experience Versus Inexperience

To me, relationships have always been important. As previously mentioned, when I was a primary health science teacher, I would see each class for half an hour a week. In the majority of classes students would arrive and we would sit down in a group and spend five minutes 'sharing'. Many people would say that this was a waste of valuable time when you only see them once a week and that you should get into activities as quickly as possible. I, however, found that students needed this sharing time as much as I did. If I spent five minutes of the lesson time listening to them, and they had the opportunity to tell me their stories, then we were able to get into our work and not have as many disruptions. But if I went straight into the lesson, students were always coming up to me to tell me things and the lesson was a lot more disjointed and disrupted. I did not like feeling that the lessons were stopping and starting because it made me feel uncertain and not in control. By allowing some 'sharing' time each lesson I felt that I was getting to know the students better - in a more personal way. I also found that the lessons seemed to flow better, making me feel more confident and sure of myself. My feelings and actions as a beginning teacher as described above reflect the results of this study as well as those by Levy, Wubbels, and Breklemans (1992) who found that beginning teachers are less dominant than more experienced teachers. For me, a 'sharing time' at the beginning of the lesson made me feel less uncertain and was part of my learning as a beginning teacher.

It is interesting that Levy and Wubbels (1991) concluded that their students saw beginning teachers as less dominant than more experienced teachers. In fact, if someone asked me the question "When were you more dominant, as an inexperienced or experienced teacher"?, my initial response would be as an inexperienced teacher. I can remember being very concerned about control, about everything going right. I used to instruct students to the hundredth degree about what they were allowed to do and what they were not allowed to do, even down to

not touching the volleyball net as they walk under it! I was always thinking about what I had to say and how I would say it. As an experienced teacher I probably have more control and am more dominant, it is just that I am not as consumed by it, so it does not seem to be a big part of my teaching any more. For instance, on a Wednesday afternoon two netball teams and two football teams catch a bus into the city to play in competitions. I ride on the bus with the students. One day, three hours before we were due to leave, the bus driver called the school and said that last week someone had slashed a seat on the bus. Students involved in the excursion from the previous week were called together and the situation was discussed. Students were told that if no one owned up to the vandalism, then they would not be going to their matches that week. Time passed and no one came forward. I was concerned and worried that I was going to have to stay true to my word. I was worried about cancelling the trip into town. In the past I guess I had tended to be submissive with large groups this was the first real opportunity where I felt I had to make a hard decision that was not going to be popular with students. In fact, I took what I thought was the hard road, I made the decision to cancel the trip. The world did not fall apart and the students did not appear to hate me. They were not happy, there was no doubt about that. But if anything, they accepted what I had done and saw it as my job, not as something personal. Looking back it, it was a turning point, it was the first time where I felt I really made the decision to be dominant and not submissive towards students in general. I had been teaching for four years when this happened.

Adam (1982) found that the more experience teachers have, the less concern they have about being liked by students. Thus, the longer a teacher teaches, the more their concern about themselves as a teacher decreases. This is definitely true in my case. As I stated earlier, as an inexperienced teacher I was concerned about being liked by the students, my interpersonal behaviour with them was more about harmony, feeling like I had done a good job and that lessons were running smoothly. With experience, this has changed to some extent. I believe that all teachers want to have good relationships with their students, it is just that with experience you are able to get past that at a superficial level. The day I said no to the sports excursion due to the slashed seat from the week before, is the day I realised that all students would not like me and that relationships with students would vary. I also realised

that sometimes to help a student you may have to do something that is perceived as unpopular. In many respects this is what Patoniczek & Isaacson (1981) describe as the Third Stage, where teachers have more concern for the social and emotional needs of students. This is supported by Fuller (1969), who stated that experienced teachers become more concerned with students and less concerned about themselves. Reaching this enlightenment meant that I have became more dominant in the classroom. No longer am I prepared to take the easy road of least resistance, rather I am prepared to do what I believe is right for the students. That does not mean that I do not want to be liked and students don't sway me, it just means that over time, and with greater insight, I have more confidence in myself and my ability to do what is right rather than what is wanted by the students. My behaviour is reflected in the results from this study which show that over time and with more experience, health science teachers show more dominant behaviour.

Veenman (1984) found that the best teachers set rules and expectations in the first classes for the year. Emmer and Evertson (1981) support the importance of establishing and communicating rules, expectations and procedures to students in the first days of the year. Establishing rules and communication is very important, especially at the beginning of the school year. Once, however, teachers have been at a school for a number of years and relationships have been established, this procedure changes. When inexperienced or new at a school you have no history with students and they are more likely to 'test you out'. Where as when you have been at a school for a number of years, you already have relationships formed from previous years with some students and new students can quickly find out from others how they perceive teachers. This was evident at the beginning of one school year when I saw my new grade 7 class for the first time. First, I was able to name a large majority of students without looking at a class list. This was because I had taught brothers or sisters of some students. Secondly, I was able to say "these are my class rules", and by checking with brothers or sisters, the students were able to find out whether what I said was fact or fiction. This made a remarkable difference to the start of the school year for me. Although I was dominant, I was dominant in a different way. Many of the grade 7 students felt they already knew me, thus our relationship was further down the track than it normally would be. One of the most common sayings I have heard at the beginning of the school year for new teachers to

a school is 'don't smile until after Easter' (note: the school year in Tasmania begins in early February). This suggests that teachers should display more strict and admonishing behaviour early in the year to enable them to set standards and expectations.

7.2.2 Attitudinal and Cognitive Outcomes

Last year, with four grade 10 classes who had health science at the same time, the three other teachers and myself decided to combine all four classes. We decided that one lesson each fortnight was going to be a group/cooperation activity and we called it 'Our Lesson'. Students were randomly placed into teams of eight. They remained in these teams for the duration of the unit. Each lesson the teachers devised a fun activity for teams to work on. Activities ranged from reaching the highest point on a stick, to a Frisbee golf challenge to the 'Nuclear Swamp' activity. Activities were developed around the need for teams to work together in a cooperative manner. Teams were also awarded extra points for criteria set on the day. For instance, in one lesson it was the team with the best smiles, another lesson it was the team who supported each other the best. As teachers, we were all actively involved in the lessons, supporting teams, demonstrating activities and generally having fun. At the beginning of each lesson, students and teachers would gather around the scoreboard to see how their teams were going and to find out what the activity was for that day.

As teachers we had lots of fun, not only devising the activities but demonstrating them to the classes and encouraging the students. We looked forward to these lessons once a fortnight and it soon became apparent that the students were also feeling the same way. We would get to class and students would try to convince us to change a netball lesson to 'Our Lesson'. We begun to have students from other classes ask us if they could do what 'the other' class was doing. The best comment came from a parent who said "The students were having so much fun and just loved participating in 'Our Lesson' and they thought the teachers were cool".

We also found that in the lessons where students participated in the group/cooperation activities, students generally had the correct change of gear and

were ready to participate earlier than in normal lessons and that the lessons often went over time, into the break, without complaint from the students. When evaluation sheets were completed at the end of the year, students in the class that participated in 'Our Lesson' generally showed a more positive attitude towards health science than did students from other classes. The unit as described above seems to support not only the findings of this study but also the research completed by Wubbels, Brekelmans, and Hermans (1987) who found that cooperation scales of the model of interpersonal teacher behaviour such as student responsibility/freedom, understanding, helping/friendly and leadership behaviours are positively related to attitudinal outcomes.

The group/cooperation activities illustrate a unit that stresses participation and enjoyment. I am generally more concerned with student affective outcomes rather than their cognitive outcomes. In the group/cooperation activities students were assessed on their participation and team cohesion, reinforcing the idea that you do not have to be the best, you just have to try your best, and participation is most important. Being concerned with student attitudinal outcomes has not been achieved through conscious thought. Over time, however, I have realised that although marks are important they are secondary to the students' attitudes. While being concerned about safety, I aim to develop caring interpersonal relationships with students and a classroom environment which is respectful and cooperative. According to Battistich, Schaps, Watson, and Solomon (1996) this has positive effects on student academic and interpersonal behaviour, attitude, and motivation.

Wubbels and Levy (1991) found the higher the grade level, the more students see teachers as dominant. They also found the higher the academic marks a student receives, the more cooperative the teacher is perceived to be. In many cases this would appear to be true. Students who achieve good marks in health science are more skilful and probably feel more successful than students who achieve lower marks, whereas, students who are less physical are more likely to feel frustrated when they cannot perform a skill, and hence perceive they are less successful.

While I try to make sure that all students, whatever their achievements, receive constructive feedback, I know that I am sometimes not as patient as I could be. At

times I may display oppositional and dominant behaviour towards students who are either not trying their best or not participating at the level at which they are capable. My primary goal in teaching health science is for students to participate and enjoy themselves. Thus, students of lesser ability who always work to their best and participate fully, have as much chance of getting a good mark as a talented student who has a laissez faire approach. In fact, I would say that my relationships with the less talented student who tries hard is better than with a talented student who does not achieve, as I would be displaying cooperation type behaviour towards the less talented student and more oppositional behaviour towards the talented student.

7.2.3 Comparison of Male and Female Student Perceptions of Teacher Interpersonal Behaviour

In this study there were not great differences between how male and female students perceived their health science teachers. Female students, however, perceived their teachers to show greater helping/friendly and understanding behaviour while male students perceived their teachers to demonstrate more uncertain, dissatisfied, admonishing and strict behaviour and to also allow greater student responsibility and freedom.

Fisher and She (2000) found that females perceived their teachers to be more understanding and friendly than males, and that males see teachers as more controlling than females do. Other research by Rawnsley and Fisher (1997) and Rickards and Fisher (1997) found that on the whole, females perceived their learning environment more positively than males. My relationship with males and females is different. At a personal level I feel that I get on better with females and I am able to be more of a friend to them if needed. Therefore, females probably see me as more understanding than do the males. My relationship with males is based more on dominance whereas with females it is based on cooperation. I find that with females I spend more time demonstrating understanding behaviour than I do with males. For example, with a number of females who do not really like health science, I have found that the best way to relate to them is through negotiation at a personal level, on a one-to-one basis. In one of my classes I had a student who really did not like

participating in practical lessons. Through negotiation and communication the student and I worked out what she would do in lessons; this involved participating in some lessons, and in other lessons being a scorer or umpire, so that although she was not actively participating, she was still involved in the lesson. Generally, however, I find that if I am having to discuss a negative situation with a male, the negotiating and understanding approach is not as successful as a more dominant approach.

7.3 SUMMARY

The statistical results from the QTI as well as comments from students during focus group interviews, appear to concur with the experiences the researcher has had as a health science teacher.

Chapter 8, the final chapter in this thesis, allows information from to this study to be concluded and includes a discussion on the limitations of this study. Conclusions are then drawn as the research questions are addressed, followed by a section on the implications for health science teachers and finally, avenues of potential research involving the QTI in health science classrooms are explored.

CHAPTER 8

CONCLUSIONS

8.1 INTRODUCTION

This thesis consists of 8 chapters. Chapter 1 established the rationale for this study, Chapter 2 contains a review of the literature and Chapter 3, a description of the methodology used. Chapters 4 and 5 contain a report of the analyses and discussion of the quantitative results. Comments from students that supported the results obtained from the QTI are presented in Chapter 6. Chapter 7 is a personal reflection from the researcher, allowing a real-world insight into the similarities of the results from this thesis with the experiences of a health science teacher. This final chapter provides a conclusion to the research study. Each research question is addressed and conclusions presented. This chapter also outlines the limitation of this research study, the implications for health science teachers as well as potential avenues for future research.

8.2 LIMITATIONS OF THE STUDY

An obvious limitation of this study is that the sample was comprised of only grade 9 and grade 10 students from Tasmania, Australia. Thus, caution should be taken with any inferences made in regard to the wider population of health science teachers and students. Although a variety of schools took part in the study, no independent schools were represented. It should also be noted that single sex schools were not asked to participate in this study due to the need to assess sex differences within

classes. Conclusions from this study relate only to the results of this study and cannot be assumed when referring to the wider community.

The quantitative sample size of this study was relatively large, however, the sample size of the qualitative data could have been more extensive. Time constraints, budget and resource limitations resulted in less qualitative data being collected than originally planned. Although the focus groups provided valuable qualitative insights and thoughts about health science teacher interpersonal behaviour, one cannot extrapolate the comments to the whole sample.

In the literature review in Chapter 2 it is sometimes inferred that student outcomes were the result of a particular type of teacher interpersonal behaviour. Another limitation of this study is concluding, perhaps incorrectly, that it is teacher interpersonal behaviour in the classroom that causes particular student attitudinal or cognitive outcomes, because teacher interpersonal behaviour in the classroom is often influenced by the ability and attitude of students.

8.3 MAJOR FINDINGS OF THE STUDY

There were ten research questions proposed in this study and each is addressed in terms of the results. The first research question proposed in this study was:

> *Is the Questionnaire on Teacher Interaction (QTI) used in this study, in both its student and teacher self questionnaire form, a valid and reliable instrument for measuring perceptions of the interpersonal behaviour of health science teachers?*

The QTI was developed to measure the interpersonal behaviour of teachers in their classroom. Perceptions of teacher interpersonal behaviour were gained from both students and teachers, and two versions of the QTI were used in this study, the Student QTI and the Teacher Self QTI.

The statistical validation of the QTI is presented in Chapter 4 and shows that the QTI is a reliable instrument when used in grade 9 and grade 10 health science classrooms in Tasmania, Australia. The internal consistency of each scale was shown to be above the minimum acceptable levels for both the Student QTI and the Teacher Self QTI. Alpha reliability figures for different QTI scales ranged from 0.61 to 0.86 when the individual was used as the unit of analysis, and from 0.72 to 0.96 when using the class mean as the unit of analysis when students completed the Student QTI, and from 0.55 to 0.79 when teachers completed the Teacher Self QTI.

It was found that only four scales differentiated significantly ($p<0.01$) between classes: the scales of Understanding, Helping/Friendly, Student Responsibility/Freedom and Strict. The eta^2 statistic, representing the proportion of variance explained by class membership, ranged from 0.00 to 0.03. In previous studies, the eta^2 statistic has generally differentiated between classes leading to the conclusion that health science teacher interpersonal behaviour may be fairly similar.

The circumplex nature of the QTI in health science classrooms was confirmed using simple correlations (r) between scales. This showed that scales correlated positively with adjacent scales, which show similar behaviour, and negative correlations were found with opposite scales, which reflect opposite behaviour.

The second research question was:

> *Is the Attitude Scale used in this study a valid and reliable instrument?*

The Attitude Scale was found to have an alpha reliability of 0.87 which is above the minimum acceptable, level of 0.60 proposed by Nunnally (1967). The Attitude Scale is therefore considered to show a high level of internal consistency and to be a valid and reliable instrument for use in health science classrooms.

The third research question was:

> *Which Australian QTI typology best represents health science teachers in Tasmanian schools?*

According to the Australian typologies proposed by den Brok, Rickards, and Fisher (2003) Tasmanian health science teachers can be classified as being Type 1 – Tolerant/Authoritative or Type 2 – Authoritative. Both tend to have more productive learning environments and are considered good by students (Brekelmans, Levy, & Rodriguez, 1993).

The fourth research question was:

> *What differences exist between health science student perceptions of teacher interpersonal behaviour and teacher perceptions of their own interpersonal behaviour?*

Tasmanian health science teachers generally saw themselves in a more positive way than did their students. They believed that they displayed more leadership, helping/friendly, understanding, uncertain, and strict behaviour and less dissatisfied and admonishing behaviour compared to student beliefs. Teachers and students agreed on the amount of student responsibility/freedom behaviour that teachers displayed. Overall, teachers saw themselves as being more dominant and cooperative than their students did.

The fifth research question was:

> *Is there an association between student perceptions of teacher interpersonal behaviour and attitudinal outcomes of students in health science classes?*

This study found that all eight scales of the QTI showed significant associations between teacher interpersonal behaviour and student attitudinal outcomes. These associations were positive for the Leadership, Helping/Friendly, Understanding, and

Student Responsibility/Freedom scales. Negative associations were found for the Uncertainty, Dissatisfied, Admonishing, and Strict scales. In this study, it appears that the greatest positive contribution to student attitude occurs when teachers display leadership and are helping and friendly to the students.

Data from this study also suggest that 31% of the variance in student attitude towards their health science lessons can be attributed to their perceptions of health science teacher interpersonal behaviour.

The sixth research question proposed in this study was:

> *Is there an association between student perceptions of teacher interpersonal behaviour and cognitive outcomes of students in health science classes?*

Student cognitive outcomes were measured in terms of their academic award in class. Each scale of the QTI showed a significant relationship between teacher interpersonal behaviour and student cognitive outcomes. The scales of Leadership, Helping/Friendly, Understanding, and Student Responsibility/Freedom were related to positive cognitive outcomes, while the scales of Uncertainty, Dissatisfaction, Admonishing and Strict were negatively related to students' cognitive outcomes.

This study demonstrated that the perceived leadership and helping/friendly behaviour of a teacher makes the most positive contribution to students' cognitive outcomes. It was found that 12% of the variance in student cognitive outcomes could be attributed to their perceptions of teacher interpersonal behaviour.

Results from this study indicate that health science teacher interpersonal behaviour has a greater influence on student attitudes than on their cognitive achievement. This replicates findings in other studies by Fisher, Henderson, and Fraser (1995), Henderson, Fisher, and Fraser (2000) and Wubbels, Brekelmans, and Hooymayers (1991).

The seventh research question was:

> *What associations exist between student perceptions of teacher interpersonal behaviour and teaching experience?*

In this study, all eight scales of the QTI were deemed to differentiate significantly ($p<0.01$) between years of teaching experience. Statistical analysis of data showed that the eta^2 statistic representing the proportion of variance explained by the experience of teachers ranged from 0.01 to 0.12 for different scales.

Students perceived teachers with less experience as demonstrating less dominant behaviour and more oppositional behaviour compared with experienced teachers. As the experience of health science teachers increases, they show increased leadership, dissatisfied and strict behaviour. They do, however, show less admonishing behaviour. This trend continues until health science teachers have been teaching for about 10 years. At this time, teachers display an increase in the amount of leadership, student responsibility/freedom, dissatisfied and strict behaviour.

The eighth research question proposed in this study was:

> *In health science classes do male and female student perceptions of teacher interpersonal behaviour differ?*

The extent of the differences in how male and female students perceive their health science teachers' interpersonal behaviour is small. It is, however, statistically significant for seven of the eight scales of the QTI. The differences generally indicate that female students perceive their teachers in a more positive manner especially in the scales of helping/friendly and understanding behaviour. Male students tend to see their teachers demonstrating more uncertain, dissatisfied, admonishing, and strict behaviour. The males also perceive teachers as allowing greater student responsibility and freedom.

In terms of student attitude, male students generally have a better attitude to health science classes. Both, however, are good.

The ninth research question was:

> *Are the statistical results from the use of the QTI supported by student comments about teacher interpersonal behaviours?*

Student comments about health science teacher interpersonal behaviour were gathered through the use of focus groups. This study found that the qualitative data from the focus groups generally supported the quantitative data obtained from the use of the QTI.

When discussing health science teacher interpersonal behaviour, student comments indicate that they believed they had more responsibility and freedom than the quantitative data found. Although student comments indicate that their teachers were moderately strict in class, students saw their teachers' strictness as being closely related to their teachers' leadership behaviour.

Both student comments and the quantitative data confirmed that students see less experienced teachers as less dominant and more submissive. Teachers with more experience were described as more dominant. Student comments also indicate that students see younger, less experienced teachers as peers as much as they see them as teachers.

The quantitative data indicated that both male and female students have positive attitudes to health science, with males being slightly more positive. Student comments reflected this.

The final research question proposed in this study was:

> *How similar are the results from this study to the researcher's own experiences as a health science teacher?*

It would appear that there are similarities between the results from this study and my own personal experiences as a health science teacher.

As a teacher, I tend to think in general terms about my classes. This study has enabled me to reflect on my interpersonal behaviour with students using the scales of the QTI as a guide. In the past I have been very aware of my relationship with students and how students perceive my interpersonal behaviour. This study has reinforced some of the good aspects of health science teacher interpersonal behaviour as well as some of the negative aspects.

8.4 IMPLICATIONS FOR HEALTH SCIENCE TEACHERS

The first major implication of this study has been the validation of an instrument in the health science learning area for measuring classroom environment. Health science teachers can use the QTI to investigate their interpersonal behaviour, either using the perceptions of their students or of themselves.

The validation of the QTI allows it to be used to monitor teacher interpersonal behaviour. Thus, teachers could use it as an evaluation tool to examine health science classroom environments. Teachers can use the results from the Student QTI and the Teacher Self QTI to compare the differences between what students perceive and what teachers perceive their interpersonal behaviour to be. They may also choose to compare their results with the results from this study or from data from a colleague enabling teachers to reflect upon and discuss interpersonal behaviour of teachers in health science classrooms.

Teachers can also use the QTI to monitor their classroom environment over a period of time. Reasons for this may be the introduction of a new curriculum, students entering or exiting the class, and intervention programs specifically aimed at changing some aspect of the classroom environment. If the QTI is used to gather data before, during or after a change in the classroom, then teachers would be provided with information on their interpersonal behaviour over time.

This study of health science teachers has shown that there is a positive association between teachers who display behaviours from the right side of the Model for

Interpersonal Behaviour and desirable student outcomes, both attitudinal and cognitive. Conversely, the left side of the Model for Interpersonal Behaviour is negatively associated with desirable student outcomes. Therefore, it appears that if health science teachers wish to have positive student attitudinal and cognitive outcomes, then they need to display high levels of leadership, helping/friendly and understanding behaviour such as: organising the class, setting tasks, determining procedures and holding the attention of the students. They also need to behave in a friendly and understanding manner by assisting, showing interest in the students, and generally making the students feel confident, understood and trusting of their teacher.

Through examination of the typology which best represents health science teachers, the teachers can gain a greater understanding of their interpersonal behaviour and aim to improve their behaviour and relationships with students as required. Utilising the Australian typologies of teacher interpersonal behaviour as discussed by den Brok, Rickards, and Fisher (2003) and reviewed in Section 2.5.2, the average Tasmanian health science teacher is best represented by the typologies of teacher Type 1 - Tolerant/Authoritative and Type 2 - Authoritative (see Section 5.3). Authoritative teachers are considered to be good teachers by their students (Brekelmans, Levy, & Rodriguez, 1993, p. 50) and Tolerant/Authoritative teachers support an environment of student responsibility and freedom, and develop close relationships with their students (Brekelmans, Levy, & Rodriguez, 1993, p. 50). Both Authoritative and Tolerant/Authoritative teachers display moderate to high levels of dominant behaviour and low levels of oppositional behaviour which according to Brekelmans, Levy, and Rodriguez (1993) create productive learning environments. At the time of this study, health science teachers appeared to be displaying interpersonal behaviour conducive to good learning environments and enhanced student achievement and attitudes.

This study has also shown that the interpersonal behaviour of teachers varies with length of teaching experience. As teaching experience increases, teachers increased their leadership, understanding and strict behaviour and decreased their admonishment of students. In schools where there is more than one health science teacher consideration could be given to the timetabling of classes so that students are taught by teachers with a variety of years of teaching experience. Consideration

could also be given to having more of a 'team' teaching approach, where two teachers teach side by side with two classes. This approach would allow inexperienced teachers to not only observe, but to also take an active role in lessons with a more experienced teacher.

In this study, both male and female students perceived teacher interpersonal behaviour in a positive manner. This positive attitude to health science classes and their teachers is encouraging. From a male student perspective, health science teachers could demonstrate more dominant and cooperative behaviour and less oppositional and submissive behaviour.

8.5 SUGGESTIONS FOR FURTHER RESEARCH

This study provides the first major data on the use of the QTI in health science classrooms, providing a starting point for future research using the QTI in the health science learning area. As discussed in the literature review, a number of studies involving the use of the QTI have been completed in subjects other than health science. These studies could be used as a guide for future research. There are, however, some areas which should be emphasized.

This study investigated associations between teacher interpersonal behaviour and student attitude. In this study, student attitudes were assessed using an Attitude Scale. The assessment of student attitudes could be taken a step further by looking at their attitudes in terms of the practical and theoretical aspects of the subject, rather than attitudes to the subject as a whole. This would allow teachers to examine their interpersonal behaviour on two levels, extending the positive results from one area to another.

This study also examined the differences between male and female student perceptions of teacher interpersonal behaviour. The classes that undertook this study were all coeducational. There are, however, a number of single sex schools in Tasmania as well as some coeducational schools which have single sex health science classes. An investigation into teacher interpersonal behaviour in single sex

classes would allow a comparison between single sex classes and coeducational classes. This would allow coeducational schools to structure their programs to achieve the best outcomes of their students.

Fraser (1998a, 1998b) believes that a desirable characteristic of a questionnaire such as the QTI is its capability to differentiate between perceptions of students in different classes. Previous studies (Wubbels, Brekelmans, & Hooymayers, 1991; Wubbels, Créton, Levy, & Hooymayers, 1993; Khine & Fisher, 2003) using the QTI have found that it is able to distinguish between classes. In this study, however, it was found that the QTI was not able to distinguish between perceptions of students from different health science classes. This is an area of potential concern. Further research into the QTI in health science classes to examine this anomaly is warranted.

As discussed in section 1.1.2, the importance of good interpersonal behaviour by health science teachers is paramount in health science classrooms. Waldrip and Fisher (2003) and Waldrip, Fisher, and Churach (2003) used the QTI to identify and describe the behaviour of very good or exemplary teachers. They defined better teachers as those whose student perceptions were more than one standard deviation above the mean on the scales of Leadership, Helping/Friendly, and Understanding and more than one standard deviation below the mean on the Dissatisfied and Admonishing scales. Similar research could be conducted in health science classrooms. It may then help other health science teachers to discuss, reflect and learn from the findings, leading to an overall improvement in their interpersonal behaviour as well as student outcomes.

Another potential avenue of study is alluded to by Bushby (1999). In a pilot study, she investigated the differences between teacher interpersonal behaviour with difficult students and the whole class. Using data from the QTI for comparison of profiles of difficult students with whole class profiles may provide educators with information that could aid in planning and professional development. Trying to understand the profiles of difficult students may also help educators to develop strategies that produce more appropriate and desirable interpersonal behaviour from these students.

This research could serve as baseline data for grade 9 and grade 10 teacher interpersonal behaviour in health science classrooms in Tasmania. As discussed in section 1.1.1, health science in Tasmania has undergone some major changes in the last six years. First, new grade 9 and grade 10 syllabuses have been implemented into schools. Secondly, there has been, the development and implementation of the *Essential Learning Framework* (2002). When the new grade 9 and grade 10 courses were being written, some of the hopes of the writing committee were that:

- students would see the new courses as more worldly relevant ;
- there would be a greater integration of knowledge into practice; and
- students and teachers would develop better relationships.

These initiatives have resulted in a change to the curriculum. Future research could be undertaken to investigate if teacher interpersonal behaviour has changed. If this is so, how has it changed and has the curriculum influenced these changes?

Another interesting follow-up to this study would an examination of teacher interpersonal behaviour in different subjects. In the past, the QTI has mainly been used in science and mathematics classrooms. This study shows how health science students perceive teacher interpersonal behaviour but there are insufficient data available to draw conclusions about the similarities and differences between these results and results from other subject areas.

The data from this study and the resulting profiles and associations relate to grade 9 and grade 10 health science students in Tasmania. Different grade levels prefer different environments (Hattie, Byrne, & Fraser, 1987). So another area of study would be the examination of teacher interpersonal behaviour in health science classrooms from kindergarten to grade 12. This would enable teachers to take into account the changes in the way students perceive health science teacher interpersonal behaviour. The development of a primary level instrument would also allow longitudinal studies to take place.

As a student I went to school in a number of countries: Canada, the USA, Nigeria, England, the Philippines and Australia. During this time, I was not consciously

aware of major differences in my health science teachers' interpersonal behaviour. In 1994 I also went overseas to England from Australia on a Teacher Exchange. One of the things that amazed me was how similar my teaching practices were compared to the health science teachers in England. We had trained on different sides of the world, yet we seemed to hold the same philosophies and teaching ideas. Therefore, an international approach to teacher interpersonal behaviour in health science classrooms could be valuable to classroom environment research. It would enable teacher interpersonal behaviour data to be compared across the world. This could highlight both positive and negative aspects of teacher interpersonal behaviour, leading to more insights into and better practices in professional development opportunities for teachers.

Brekelmans (1989) believed that the QTI only needed to be used once to gain an insight into a teacher's interpersonal behaviour in front of the class. If teachers are reflecting on the results of the QTI and trying to instigate change in their classroom, then the QTI would be a useful tool to use over the year so that any changes would be recognised. This would enable a detailed picture of the teacher's interpersonal behaviour in the classroom over time, providing them with continual feedback.

Another key area of research could be to investigate the nature of the differences between the perceptions of students and teachers of teacher interpersonal behaviour in greater depth. Some possible research questions in this area could include:

- Are there sex differences between teacher perceptions and student perceptions of teacher interpersonal behaviour?
- Do students prefer to have same sex or opposite sex teachers?
- Are student outcomes, such as attitude and cognitive achievement affected by the sex of the teacher?

The potential for further study using the QTI in health science classes is vast. Future studies investigating the QTI and its associations between student outcomes, sex of students, sex of teacher, exemplary teachers, difficult students, cultural differences, and a comparison between schools - whether intra-state, inter-state or international - would provide a rich source of data in the field of learning environment research.

8.6 RECOMMENDATIONS FOR HEALTH SCIENCE IN TASMANIA

Both quantitative and qualitative data from this study indicate that the QTI is a valid and reliable instrument. Thus, Tasmanian health science teachers could utilise the QTI to examine their interpersonal behaviour in the classroom. A number of teachers involved in this study indicated that by just completing the QTI with their classes, they and their class had reflected upon their interpersonal behaviour. Thus, the QTI has already been used as a starting point for discussion about health science teacher interpersonal behaviour. Through the use of the three forms of the QTI, Tasmanian health science teachers should be able to develop an excellent picture of their interpersonal behaviour.

This study found that attitudinal and cognitive outcomes of students in health science classes were positively related to teacher leadership, helping/friendly and understanding behaviour as well as allowing students responsibility and freedom in class. Health science teachers in this study also saw themselves as being more dominant and cooperative than their students did. Health science teachers need to be aware of the positive influence their leadership, helping/friendly, understanding, and student responsibility and freedom behaviour have on students as well as the difference between how they perceive their own interpersonal behaviour and how student perceive their interpersonal behaviour. Due to the differences in perceptions of teacher and student, teachers may have to display greater leadership, helping/friendly, understanding, and student responsibility/freedom behaviour than they normally would.

Students in this study perceived less experienced health science teachers as displaying less dominant behaviour and more oppositional behaviour when compared with more experienced teachers. This study has also shown that a teacher's dominant and cooperative behaviour has a positive influence on student attitudinal and cognitive outcomes. It is therefore important to give less experienced teachers opportunities to learn about and develop greater dominant and cooperative behaviour. This could include time spent in pre-service training as well as the

provision of professional development to these less experienced teachers. In both cases, information should be provided in a theoretical and practical manner, allowing participants the greatest opportunity to examine, reflect upon, discuss, develop and implement ways to improve their interpersonal behaviour with students.

The difference between how male and female students perceive their teacher interpersonal behaviour is not great; it is, however significant for eight of the scales of the QTI. Overall, male students perceived their teachers to show greater oppositional and submissive behaviour than female students. This once again indicates that, according to the perspective of male students, Tasmanian health science teachers need to show more dominant and cooperative behaviour and less oppositional and submissive behaviour.

Student scale means of health science teacher interpersonal behaviour indicate that students perceive their health science teachers to display high levels of dominant and cooperative behaviours and low levels of submissive and oppositional behaviour. According to den Brok, Rickards, and Fisher (2003) the two types of Australian typologies which best represent Tasmanian health science teachers have more productive learning environments and are considered to be good by students. This study has also found that student attitudes and cognitive outcomes are positively associated with health science teacher dominant and cooperative behaviour. It therefore appears that Tasmanian health science students perceive their health science teachers in a positive manner and that students believe that they generally have good relationships with their teachers. It also appears that in Tasmania, health science teacher interpersonal behaviour is heading in the right direction.

8.7 SUMMARY

Overall, the results from this study support the use of the QTI in health science classrooms. Health science students perceive their teachers as displaying high levels of leadership, helping/friendly and understanding behaviour, moderate levels of student responsibility/freedom and strict behaviour, and low levels of uncertain,

dissatisfied and admonishing behaviour. Teachers, however, perceive themselves to show greater leadership, helping/friendly, understanding, uncertain and strict behaviour than, do their students, but less student responsibility/freedom, dissatisfaction and admonishing behaviour.

Health science student attitudinal and cognitive outcomes appear to relate to all scales of the QTI. It is, however, the scales of Leadership and Helping/Friendly which make the greatest positive contribution to student outcomes. Health science students perceived teachers with less experience as less dominant and more oppositional when compared to teachers with more experience. As teaching experience increases, health science teachers show greater leadership with increased understanding and less admonishment, and they also display more dissatisfaction and strictness. Teachers who have been teaching for 10 years or more increase their oppositional behaviour and decrease their cooperational behaviour. Female health science students generally perceived teacher interpersonal behaviour more positively when compared to males. Male students, however, had better attitudes to health science than female students, although both were positive.

This study is the first to use the QTI in health science classes. It provides new and valuable information in learning environment research. The reliability and validity of the QTI in health science is confirmed, providing support for more research on teacher interpersonal behaviour in the health science learning area.

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Appendix A

9 HP178/177/176 B Health and Physical Education Syllabus

9 HP178/177/176 B
Health & Physical Education

Subject Description

9 HP178 B Health and Physical Education

This syllabus has been designated as being at level of difficulty 4 to conform to the Board's 2001 requirement that "syllabus documents should provide outcome statements that allow high achieving students to attain (level of difficulty) 4 at the end of year 9, 6 at the end of year 10 and 8 at the end of year 12."

This is one of three syllabuses for Year 9 students. In this syllabus, students are provided with a unique opportunity to investigate the major factors that have an impact on the management of their personal and collective well being. Students will apply health-related knowledge, behaviour and skills in an action-based approach that is relevant to their lives.

9 HP177 B Health and Physical Education

This syllabus has been designated as being at level at difficulty 3. This is one of the three syllabuses for Year 9 students. In this syllabus students are provided with a unique opportunity to investigate the major factors that have an impact on the management of their personal and collective well being. Students will demonstrate health-related knowledge, behaviour and skills in an action-based approach that is relevant to their lives.

9 HP176 B Health and Physical Education

This syllabus has been designated as being at level at difficulty 2. In this syllabus students are provided with a unique opportunity to investigate the major factors that have an impact on the management of their personal and collective well being. Students will demonstrate some health-related knowledge, behaviour and skills in an action based, practical approach that is relevant to their lives.

Previous Experience

It is assumed that students will have studied Health and Physical Education in Year 8.

Learning Objectives

Through studying courses derived from these syllabuses it is intended that students will be able to:

- respect the rights of others and accept responsibility for ones own actions (**responsibility**);

- appreciate and accept oneself in personal, social and cultural contexts (**identity**);
- interact positively with others (**relationships**);
- value and enjoy the benefits gained from regular, lifelong participation in a wide range of activities (**active participation**);
- optimise health and functional capabilities of self and others (**well being**).

Content

These syllabuses have a focus on the development of **responsibility**, **identity**, **relationships**, **active participation** and **well being**. The aim is for students to learn to make healthy lifestyle choices. These syllabuses are based on a holistic view of health. Students are encouraged to develop and maintain health-enhancing practices through an understanding of their physical, mental, emotional, social and moral dimensions.

In courses derived from these syllabuses, students will be empowered to act for better health, and understand how they can live in a way that gives them the opportunity to lead healthy and fulfilling lives.

Health and Physical Education advocates the health enhancement process. Physical activity is the framework through which the **key intentions** (objectives) of **responsibility**, **identity**, **relationships**, **active participation** and **well being** are explored and developed.

Health Enhancement Process

The purpose of this process is to help young people take an active role in protecting, maintaining and improving their health.

Guiding Principles

- Approach each unit holistically by dealing with social, emotional, mental, physical and moral aspects of health.
- Identify and teach specific skills, knowledge and attitudes to promote healthy behaviours.
- Use and link physical activity to each unit.

Responsibility

The objective states that students will respect the rights of others and accept responsibility for one's own actions. The following content aims to develop this objective.

Skill Application

- can work independently;
- use equipment safely;
- demonstrate leadership and co operative qualities;
- demonstrate respect for others.

Physical Fitness

- define health related components of fitness;

- understand the impact of fitness-related practices or environmental protection.

Harm Minimisation/Reduction
- understand factors relating to alcohol and the risk of sexual harm;
- analyse the effects of tobacco as a local and global environmental issue;
- know the effects of passive smoking.

Sexuality
- explore the responsibilities associated with parenthood;
- develop an understanding of the most common STD's and explore their signs and symptoms.

Food For Life
- develop decision making skills in food selection, preparation and advocacy;
- demonstrate healthy food choices.

Stress Busters and Body Image
- practise goal setting to effectively manage stress;
- practise decision making to maintain balanced lifestyle.

Identity

The objective states that students will appreciate and respect oneself in personal, social and cultural contexts. The following content aims to develop this objective.

Skill Application
- demonstrate independent thinking;
- prepared to 'have a go';
- develop and demonstrate confidence in working in teams;
- develop effective and assertive communication strategies;
- demonstrate effective and assertive communication strategies.

Physical Fitness
- evaluate beliefs about fitness;
- undertake activities to develop personal fitness (self-assessment);
- demonstrate decision-making skills with regard to fitness and life-style.

Harm Minimization/Reduction
- develop assertiveness skills;
- demonstrate decision making strategies to enhance identity;

Sexuality
- begin to understand the effects of emotions on body and behaviour;
- explore the relationships between sexual feelings and other feelings in sexual relationships;
- develop skills in communication, negotiation and conflict resolution.

Food For Life
- understand values, beliefs and attitudes related to food choices;
- understand the relationship between body image and eating behaviour;

- make sensible and personally responsible decisions with regard to food choices.

Stress Busters and Body Image
- understand types of conflict and styles of resolution;
- understand the notion of resilience;
- critically analyse the effect of media on body image;
- demonstrate acceptance of diversity in body image and shape.

Relationships
The objective states that students will positively interact with others. The following content aims to develop this objective.

Skill Application
- demonstrate the ability to work with others effectively;
- identify the rights and responsibilities that contribute to positive relationships.

Physical Fitness
- identify barriers/enables to participating in life long fitness activities.

Harm Minimisation/Reduction
- understand the effect of alcohol and other drugs and the risks of sexual harm;
- understand the need for contraception and family planning to enhance relationships.

Sexuality
- explore the relationships between sexual feelings and other feelings in sexual relationships;
- explore the reasons for harassment and discrimination in relation to gender and sexuality;
- identify sexual safety within relationships.

Food For Life
- demonstrate the ability to effectively work in groups to solve problems;
- Stress Busters and Body Image;
- identify supportive structures;
- identify a range of ways to offer support to their peers.

Active Participation
The objective states that students will value and enjoy the benefits gained from regular, lifelong participation in a wide range of activities. The following content aims to develop this objective.

Skill Application
- apply skills in individual and group situations;
- actively participate in a range of activities.

Physical Fitness
- actively and willingly participate in a progressive fitness program.

Harm Minimisation/Reduction

- participate in decision making process;
- identify strategies for quitting smoking;
- participate in role-plays, debates and scenarios.

Sexuality

- explore strategies to minimise harassment and discrimination in school and community;
- demonstrate conflict resolution skills;
- explore the role of decision making in relation to sexual behaviour;
- participate in role-plays, debates and scenarios.

Food For Life

- participate in goal setting;
- participate in food preparation

Stress Busters and Body Image

- actively participates in relaxation exercises;
- develop conflict resolution skills.

Well Being

The objective states that students will optimise health and functional capabilities of self and others. The following content aims to develop this objective.

Skill Application

- develop and demonstrate warm up and cool down procedures;
- develop and apply knowledge of injury prevention techniques;
- use equipment safely.

Physical Fitness

- demonstrate an understanding of the health related benefits of exercise.

Harm Minimisation/Reduction

- understand factual information about alcohol;
- understand short and long term effects of marijuana;
- know the effects of passive smoking;
- identify strategies for quitting smoking;
- identify the barriers/enablers for safe drug use.

Sexuality

- understand the stages in sexual development;
- understand the processes of conception and contraception.

Food For Life

- understand the body (digestion);
- understand special dietary needs for different groups;
- demonstrate an understanding of the relationship between food and health.

Stress Busters and Body Image

- discuss the role of hope in coping;
- identify help seeking strategies;
- understand and recognise signs and symptoms of eating disorders.

Assessment Purpose and method of assessment

The co-operation of teacher and students in setting goals and in determining the criteria for assessment is an important aspect of assessment. Self assessment or peer assessment is to be included. Many ways of assessing students' development may be considered, such as:

- teacher directed tasks;
- anecdotal records;
- video tapes;
- students journals;
- students records of goal setting and evaluation;
- checklists;
- records of fitness testing and program development;
- teacher observation of participation in formal and informal tasks;
- interviews and conferences;
- small and large group activities;
- portfolios of work/records of achievement.

For all students seeking to satisfy the assessment criteria, it will be necessary to employ as wide a range of assessment procedures as possible to ensure that competence is clearly demonstrated and accurately assessed.

Criterion-based assessment is a form of out-comes assessment which identifies the extent of student achievement at an appropriate end-point of study. Although assessment in the class-room is continuous, much of it is formative and is done to help students identify what they need to do to attain the maximum benefit from their study of the syllabus. Therefore, assessment for summative TCE reporting should focus on what both teacher and student understand to reflect end-point achievement.

The primary audience for assessment is the students and the teacher, but may also include parents when appropriate.

For all recently reviewed syllabuses, student achievement is assessed against pre-determined standards. The standard of achievement each student attains on each criterion is recorded as a rating 'A', 'B', 'C', according to the outcomes specified in the standards section of the syllabus.

Some syllabuses yet to be reviewed were created prior to the introduction of descriptive standards for the ratings. In these instances, where no descriptive standards apply, a rating of 'C' represents the range of achievement which is considered to be at an acceptable standard for this syllabus, a rating of 'B' represents achievement which exceeds the minimum standard considered to be acceptable for this syllabus, and a rating of 'A' represents the highest achievement that can be reasonably be expected within this syllabus.

For syllabuses with described standards, a 't' notation must be used where a student demonstrates any achievement against a criterion less than the standard specified for the C rating, or, in the case of syllabuses without standards, anything less than that considered to be the minimum acceptable achievement. The 't' notation sits outside the continuum of ratings that ascend through the levels of difficulty of TCE generic or subject framework criteria, and is thus not described in syllabus standards.

A 'z' notation is to be used where a student provides no evidence of achievement at all.

Schools offering this syllabus must participate in the moderation process by attending meetings and completion of the moderation requirements determined by the State Moderation Committee. Further information on moderation, as well as on assessment, is available in the TCE Manual or on the website at http://www.tassab.tased.edu.au/

Internal assessment of all criteria will be made by the school. Schools will report the students' rating for each criterion to the Tasmanian Secondary Assessment Board.

Criteria

The assessment for *9 HP178/177/176 B Health and Physical Education* will be based on the degree to which the student can:

1. collect, analyse and organise information;
2. communicate ideas and information;
3. plan, organise and undertake activities;
4. work with others and in teams;
5. solve problems;
6. actively participate in a variety of contexts;
7. demonstrate knowledge and understanding of the factors which promote a healthy lifestyle;
8. demonstrate manipulative skills and co-ordinated body movements in a range of sporting and recreational activities.

Award Requirements

The minimum requirements for an award in this syllabus are as follows:

Exceptional Achievement
7 'A' ratings, 1 'B' rating

High Achievement
3 'A' ratings, 4 'B' ratings, 1 'C' rating

Commendable Achievement
4 'B' ratings, 3 'C' ratings

Satisfactory Achievement

6 'C' ratings

Preliminary Achievement
3 'C' ratings

A student who otherwise achieves the ratings for a commendable achievement (CA) or satisfactory achievement (SA), but who fails to show any evidence of achievement in one or more criteria ('z' notation), will be issued with a preliminary award (PA).

References & Resources

Health and Physical Education Core Curriculum K-10, Department of Education 1998
Health Promoting Schools, Department of Education 1998.

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Appendix B

10 HP478/477/476 B Health and Physical Education Syllabus

Subject Description 10 HP478 B Health and Physical Education

This syllabus has been designated as being at level of difficulty 6 to conform to the Board's 2001 requirement that "syllabus documents should provide outcome statements that allow high achieving students to attain (level of difficulty) 4 at the end of year 9, 6 at the end of year 10 and 8 at the end of year 12."

This is one of the three Year 10 syllabuses. It requires students to exercise a high degree of initiative and independence. In this syllabus students are provided with a unique opportunity to investigate the major factors that have an impact on the management of their personal and collective well being. *10 HP478 B Health and Physical Education* also provides a pathway to related secondary and tertiary study and the expanding vocational fields of health, fitness, sports science, coaching and welfare.

10 HP477 B Health and Physical Education

This syllabus has been designated as being at level at difficulty 4. This is one of the three Health and Physical Education syllabuses for Year 10 students. It requires students to acquire and exercise initiative and independence. In this syllabus students are provided with a unique opportunity to explore the major factors that have an impact on the management of their personal and collective well being. *10 HP477 B Health and Physical Education* also provides a pathway to further areas of study.

10 HP476 B Health and Physical Education

This syllabus has been designated as being at level at difficulty 3. This is one of three Health and Physical Education syllabuses for Year 10 students. It requires students to acquire and demonstrate some independence. In this syllabus students are provided with a unique opportunity to explore the major factors that have an impact on the management of their personal and collective well being.

Previous Experience

It is desirable that students will have studied the Year 9 Health and Physical Education syllabus or equivalent.

Learning Objectives Through studying courses derived from these syllabuses, students are able to:

- respect the rights of others and accept responsibility for ones own actions (**responsibility**);

- appreciate and accept oneself in personal, social and cultural contexts (**identity**);
- interact positively with others (**relationships**);
- value and enjoy the benefits gained from regular, lifelong participation in a wide range of activities (**active participation**);
- optimise health and functional capabilities of self and others (**well being**).

Content

The focus of these syllabuses is two fold. First, the syllabuses are designed as a continuation of the curriculum covered in the Year 9 Health and Physical Education course and secondly these syllabuses introduce students to new content areas.

These areas are aimed at the further development of **responsibility**, **identity**, **relationships**, **active participation** and **well being**. Students will gain knowledge and understanding about a range of personal and community health issues and human movement areas with practical activities having a recreational focus.

These syllabuses are based on having a holistic view of students developing and maintaining health enhancing practices through an understanding of their physical, mental, emotional, social and moral dimensions.

Courses derived from these syllabuses will assist students to make better informed choices about health matters and lead them to be more responsible for their own health and the health of others in the community. Students will develop and apply health related knowledge, behaviour and skills in an action based practical approach that is relevant to their life.

Health and Physical Education advocates the health enhancement process. Physical activity is the framework through which the **key intentions** (objectives) of **responsibility**, **identity**, **relationships**, **active participation** and **well being** are explored and developed.

Health Enhancement Process

The purpose of this process is to help young people take an active role in protecting, maintaining and improving their health.

Guiding Principles

- Approach each unit holistically by dealing with social, emotional, mental, physical and moral aspects of health.
- Identify and teach specific skills, knowledge and attitudes to promote healthy behaviours.
- Use and link physical activity to each unit.

Responsibility

The objective states that students will respect the rights of others and accept responsibility for one's own actions. The following content aims to develop this objective.

Skill Application

- work without supervision;
- respect equipment;
- demonstrate leadership qualities;
- respect others;
- work within the wider community.

Physical Fitness
- develop and implement a fitness enhancing program in class, the school and/or community;
- identify the knowledge and skills required by communities and individuals to promote a healthier environment.

Harm Minimisation/Reduction
- understand the issues relating to road safety eg road crash rates of young drivers, speeding, drink driving;
- develop knowledge of basic resuscitation and emergency procedures.

Sexual Health
- review STD's;
- develop decision making and assertiveness skills to ensure protection against infection in sexual relationships;
- explore relevant methods of contraception.

Exercise and Nutrition
- develop knowledge of the nutritional value of foods;
- evaluate the contribution of foods to the major nutritional requirements for growth and activity.

Coping and Mental Illness
- develop help seeking strategies;
- labelling – critically analyse effect;
- explore attitudes to mental health.

Identity *(*

The objective states that students will appreciate and respect oneself in personal, social and cultural contexts. The following content aims to develop this objective.

Skill Application
- demonstrate independent thinking;
- be prepared to "have a go";
- develop and demonstrate confidence while working with others;
- display skills in a variety of settings;
- understand types of conflict, and styles of resolution;
- demonstrate effective and assertive communication strategies.*Physical Fitness*
- participate in self assessment to develop a personal fitness profile;
- demonstrate decision-making skills with regard to fitness and life-style.

Harm Minimisation/Reduction
- develop assertiveness skills;

- demonstrate decision-making strategies to enhance identity.

Sexual Health
- develop assertiveness and decision making skills;
- explore the issues and meanings of sexual identity and orientation.

Exercise and Nutrition
- analyse the factors that determine 'body image';
- make sensible and personally responsible decisions with regard to food choices.

Coping and Mental Illness
- understand self talk;
- develop coping strategies;
- analyse cultural pressures on males and females.

Relationships

The objective states that students will interact positively with others. The following content aims to develop this objective.

Skill Application
- able to work with others;
- able to work with people of varying ages;
- identify the rights and responsibilities that contribute to positive relationships.

Physical Fitness
- work with other people in improving personal levels of fitness.

Harm Minimisation/Reduction
- appreciate and understand the effect of drug use on society;
- develop mechanisms for dealing with grief and loss;
- develop an understanding of behaviours that contribute to support within relationships.

Sexual Health
- explore issues related to planned and unplanned pregnancy;
- develop effective communication skills within relationships;
- examine identifying sexual relationships that enhance relationships.

Exercise and Nutrition
- work in groups to develop shared strategies to common problems.

Coping and Mental Illness
- compare different coping strategies;
- understand effects of stress on individuals and groups;
- recognise the signs of stress on self and others;
- developing behaviours to provide support for others.

Active Participation

The objective states that students will value and enjoy the benefits gained from regular, lifelong participation in a wide range of activities. The following content aims to develop this objective.

Skill Application

- apply skills in individual and groups activities;
- learn to enjoy participating in a range of activities in a variety of situations.

Physical Fitness

- design and participate in a regular, ongoing, continuous and progressive fitness program.

Harm Minimisation/Reduction

- adopt strategies for quitting smoking;
- participate in a driver education program;
- participate in a first aid program and demonstrate skills and knowledge;
- participate in debates, role plays and scenarios.

Sexual Health

- display decision making and assertiveness skills;
- obtain and analyse information about contraception and STD's;
- investigate a range of sexual health services and providers;
- participate in debates, role plays and scenarios.

Exercise and Nutrition

- prepare or cook foods suitable for the maintenance of a active lifestyle;
- develop specific dietary requirements for athletes.

Coping and Mental Illness

- prepare or cook foods suitable for the maintenance of a active lifestyle;
- practise positive self talk and coping techniques;
- map a range of health care services.

Well Being

The objective states that students will optimise health and functional capabilities of self and others. The following content aims to develop this objective.

Skill Application

- develop and demonstrate warm up and cool down procedures;
- develop and apply knowledge of injury prevention techniques;
- use equipment safely.

Physical Fitness

- evaluate community programs developed for various groups with different needs.

Harm Minimisation/Reduction

- acquire knowledge of types of illicit drugs;
- understand short and long term effects of a range of illicit drugs;
- understand prevalence of use of illicit drugs;
- conversant with laws, policies and rules relating to smoking.

Sexual Health

- explore the holistic health needs of individuals;
- explore the health needs of the community.

Exercise and Nutrition

- relationship between physical activity and food intake.

Coping and Mental Illness

- understand the meaning of stress;
- identify barriers and motivators to seeking help;
- develop communication skills on personal health related matters;
- understand mental illness.

ASSESSMENT

Purpose and method of assessment

The co-operation of teacher and students in setting goals and in determining the criteria for assessment is an important aspect of assessment. Self assessment or peer assessment is to be included.

Many ways of assessing students development may be considered, such as:

- teacher directed tasks;
- anecdotal records;
- video tapes;
- students journals;
- students records of goal setting and evaluation;
- checklists;
- records of fitness testing and program development;
- teacher observation of participation in formal and informal tasks;
- interviews and conferences;
- small and large group activities;
- portfolios of work/records of achievement.

For all students seeking to satisfy the assessment criteria, it will be necessary to employ as wide a range of assessment procedures as possible to ensure that competence is clearly demonstrated and accurately assessed.

Criterion-based assessment is a form of out-comes assessment which identifies the extent of student achievement at an appropriate end-point of study. Although assessment in the class-room is continuous, much of it is formative and is done to help students identify what they need to do to attain the maximum benefit from their study of the syllabus. Therefore, assessment for summative TCE reporting should focus on what both teacher and student understand to reflect end-point achievement.

The primary audience for assessment is the students and the teacher, but may also include parents when appropriate.

For all recently reviewed syllabuses, student achievement is assessed against pre-determined standards. The standard of achievement each student attains on each criterion is recorded as a rating 'A', 'B', 'C', according to the outcomes specified in the standards section of the syllabus.

Some syllabuses yet to be reviewed were created prior to the introduction of descriptive standards for the ratings. In these instances, where no descriptive standards apply, a rating of 'C' represents the range of achievement which is considered to be at an acceptable standard for this syllabus, a rating of 'B' represents achievement which exceeds the minimum standard considered to be acceptable for this syllabus, and a rating of 'A' represents the highest achievement that can be reasonably be expected within this syllabus.

For syllabuses with described standards, a 't' notation must be used where a student demonstrates any achievement against a criterion less than the standard specified for the C rating, or, in the case of syllabuses without standards, anything less than that considered to be the minimum acceptable achievement. The 't' notation sits outside the continuum of ratings that ascend through the levels of difficulty of TCE generic or subject framework criteria, and is thus not described in syllabus standards.

A 'z' notation is to be used where a student provides no evidence of achievement at all.

Schools offering this syllabus must participate in the moderation process by attending meetings and completion of the moderation requirements determined by the State Moderation Committee. Further information on moderation, as well as on assessment, is available in the TCE Manual or on the website at http://www.tassab.tased.edu.au/

Internal assessment of all criteria will be made by the school. Schools will report the students' rating for each criterion to the Tasmanian Secondary Assessment Board.

Criteria

The assessment for *10 HP478/477/476 B Health and Physical Education* will be based on the degree to which the student can:

1. collect, analyse and organise information;
2. communicate ideas and information;
3. plan, organise and undertake activities;
4. work with others and in teams;
5. solve problems;
6. actively participate in a variety of contexts;
7. demonstrate knowledge and understanding of the factors which promote a healthy lifestyle;
8. demonstrate physical fitness, manipulative skills and co-ordinated body movements in a range of sporting and recreational activities.

Award Requirements

The minimum requirements for an award in this syllabus are as follows:

Exceptional Achievement
7 'A' ratings, 1 'B' rating

High Achievement
3 'A' ratings, 4 'B' ratings, 1 'C' rating

Commendable Achievement
4 'B' ratings, 3 'C' ratings

Satisfactory Achievement
6 'C' ratings

Preliminary Achievement
3 'C' ratings

A student who otherwise achieves the ratings for a commendable achievement (CA) or satisfactory achievement (SA), but who fails to show any evidence of achievement in one or more criteria ('z' notation), will be issued with a preliminary award (PA).

References & Resources

Health and Physical Education Core Curriculum K-10, Department of Education 1998
Health Promoting Schools, Department of Education 1998.

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Tasmanian Secondary Assessment Board
PO Box 147 SANDY BAY 7006.
Ph: (03) 6233 6364 Fax: (03) 6224 0175

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Appendix C

Attitude Scale

ATTITUDE SCALE

Items 1 – 8 below consist of a number of statements about the class which you are in right now. Your opinion is what is wanted. There are no right or wrong answers. Answer what you think about each statement.

For each statement, draw a circle around

1 if you **strongly disagree** with the statement;
2 if you **disagree** with the statement;
3 if you are **not sure**;
4 if you **agree** with the statement;
5 if you **strongly agree** with the statement.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I look forward to this class.	1	2	3	4	5
I feel confused during this class.	1	2	3	4	5
This class is a waste of time.	1	2	3	4	5
This class is among the most interesting at this school.	1	2	3	4	5
The thought of this class makes me tense.	1	2	3	4	5
I enjoy this class.	1	2	3	4	5
I have a sense of satisfaction after this class.	1	2	3	4	5
Practical activities make me interested in this class.	1	2	3	4	5

Appendix D

Student Version of the Questionnaire on Teacher Interaction (QTI)

QUESTIONNAIRE ON TEACHER INTERACTION

STUDENT QUESTIONNAIRE

This questionnaire (on the other side of the paper) asks you to describe the behaviour of your teacher.

Your opinion is what is wanted. There are no right or wrong answers. Answer what you think about each statement.

This questionnaire has 48 sentences about the teacher. For each sentence, circle the number corresponding to your response. For example:

	Never				Always
This teacher expresses himself/herself clearly	0	1	2	3	4

If you think that your teacher always expresses himself/herself clearly, circle the 4. If you think your teacher never expresses himself/herself clearly, circle the 0. You can also choose the numbers 1, 2 and 3 which are in-between. If you want to change your answer, cross it out and circle a new number. Please answer all questions. Thank you for your co-operation.

My Name (optional): _____ Class: _____

My Teachers' Name (optional): _____ School: _____

	Never				Always
1. This teacher talks enthusiastically about his/her subject.	0	1	2	3	4
2. This teacher trusts us.	0	1	2	3	4
3. This teacher seems uncertain.	0	1	2	3	4
4. This teacher gets angry unexpectedly.	0	1	2	3	4
5. This teacher explains things clearly.	0	1	2	3	4
6. If we don't agree with this teacher, we can talk about it.	0	1	2	3	4
7. This teacher is hesitant.	0	1	2	3	4
8. This teacher gets angry quickly.	0	1	2	3	4
9. This teacher holds our attention.	0	1	2	3	4
10. This teacher is willing to explain things again.	0	1	2	3	4
11. This teacher acts as if she/he does not know what to do.	0	1	2	3	4
12. This teacher is too quick to correct us when we break a rule.	0	1	2	3	4
13. This teacher knows everything that goes on in the classroom.	0	1	2	3	4
14. If we have something to say, this teacher will listen.	0	1	2	3	4
15. This teacher lets us boss her/him around.	0	1	2	3	4
16. This teacher is impatient.	0	1	2	3	4
17. This teacher is a good teacher.	0	1	2	3	4
18. This teacher realises when we don't understand.	0	1	2	3	4
19. This teacher is not sure what to do when we fool around.	0	1	2	3	4
20. It is easy to pick a fight with this teacher.	0	1	2	3	4
21. This teacher acts confidently.	0	1	2	3	4
22. This teacher is patient.	0	1	2	3	4
23. It's easy to make a fool out of this teacher.	0	1	2	3	4
24. This teacher is sarcastic.	0	1	2	3	4
25. This teacher helps us with our work.	0	1	2	3	4
26. We can decide some things in this teachers' class.	0	1	2	3	4
27. This teacher thinks we cheat.	0	1	2	3	4
28. This teacher is strict.	0	1	2	3	4
29. This teacher is friendly.	0	1	2	3	4
30. We can influence this teacher.	0	1	2	3	4
31. This teacher thinks that we don't know anything	0	1	2	3	4
32. We have to be silent in this teachers' class	0	1	2	3	4
33. This teacher is someone we can depend on.	0	1	2	3	4
34. This teacher lets us decide when we will do the work in class.	0	1	2	3	4
35. This teacher puts us down.	0	1	2	3	4
36. This teachers' tests are hard.	0	1	2	3	4
37. This teacher has a sense of humour.	0	1	2	3	4
38. This teacher lets us get away with a lot in class.	0	1	2	3	4
39. This teacher thinks that we can't do things well.	0	1	2	3	4
40. This teachers' standards are high.	0	1	2	3	4
41. This teacher can take a joke.	0	1	2	3	4
42. This teacher gives us a lot of free time in class.	0	1	2	3	4
43. This teacher seems dissatisfied.	0	1	2	3	4
44. This teacher is severe when marking.	0	1	2	3	4
45. This teachers' class is pleasant.	0	1	2	3	4
46. This teacher is lenient.	0	1	2	3	4
47. This teacher is suspicious.	0	1	2	3	4
48. We are afraid of this teacher.	0	1	2	3	4

Appendix E

Teacher Self Version of the Questionnaire on Teacher Interaction (QTI)

QUESTIONNAIRE ON TEACHER INTERACTION

TEACHER SELF QUESTIONNAIRE

This questionnaire has 48 sentences about your behaviour in a particular class and needs to be filled out for each grade 9 and grade 10 classes you teach who fill out the student questionnaire.

For each sentence, circle the number corresponding to your response.

For example:

	Never				Always
I express myself clearly	0	1	2	3	4

If you think you always express yourself clearly, circle the 4. If you think you never express yourself clearly, circle the 0. You can also choose the numbers 1, 2 and 3 which are in-between. If you want to change your answer, cross it out and circle a new number. Please answer all questions.

Reports on how classes perceived your behaviour can be sent to you. If you wish to receive a report on your behaviour please tick in the appropriate box.

I would like a report on how my classes see my behaviour ☐

I would like a report on how I see my behaviour ☐

Teachers' Name (optional): _____ Gender: Male / Female

School: _____ Class: _____ Years of teaching: _____

	Never				Always
1. I talk enthusiastically about my subject.	0	1	2	3	4
2. I trust the students.	0	1	2	3	4
3. I seem uncertain.	0	1	2	3	4
4. I get angry unexpectedly.	0	1	2	3	4
5. I explain things clearly.	0	1	2	3	4
6. If students don't agree with me, they can talk about it.	0	1	2	3	4
7. I am hesitant.	0	1	2	3	4
8. I get angry quickly.	0	1	2	3	4
9. I hold the students' attention.	0	1	2	3	4
10. I am willing to explain things again.	0	1	2	3	4
11. I act as if I do not know what to do.	0	1	2	3	4
12. I am too quick to correct students when they break a rule.	0	1	2	3	4
13. I know everything that goes on in the classroom.	0	1	2	3	4
14. If students have something to say, I will listen.	0	1	2	3	4
15. I let the students take charge.	0	1	2	3	4
16. I am impatient.	0	1	2	3	4
17. I am a good teacher.	0	1	2	3	4
18. I realise when students don't understand.	0	1	2	3	4
19. I am not sure what to do when students fool around.	0	1	2	3	4
20. It is easy for students to have an argument with me.	0	1	2	3	4
21. I act confidently.	0	1	2	3	4
22. I am patient.	0	1	2	3	4
23. It's easy to make me feel unsure.	0	1	2	3	4
24. I make mocking remarks.	0	1	2	3	4
25. I help students with their work.	0	1	2	3	4
26. Students decide some things in my class.	0	1	2	3	4
27. I think that students cheat.	0	1	2	3	4
28. I am strict.	0	1	2	3	4
29. I am friendly.	0	1	2	3	4
30. Students influence me.	0	1	2	3	4
31. I think that students don't know anything.	0	1	2	3	4
32. Students have to be silent in my class.	0	1	2	3	4
33. I am someone students can depend on.	0	1	2	3	4
34. I let students decide when they will do the work in class.	0	1	2	3	4
35. I put students down.	0	1	2	3	4
36. My tests are hard.	0	1	2	3	4
37. I have a sense of humour.	0	1	2	3	4
38. I let students get away with a lot in class.	0	1	2	3	4
39. I think that students can't do things well.	0	1	2	3	4
40. My standards are very high.	0	1	2	3	4
41. I can take a joke.	0	1	2	3	4
42. I give students a lot of free time in class.	0	1	2	3	4
43. I seem dissatisfied.	0	1	2	3	4
44. I am severe when marking.	0	1	2	3	4
45. My class is pleasant.	0	1	2	3	4
46. I am lenient.	0	1	2	3	4
47. I am suspicious.	0	1	2	3	4
48. Students are afraid of me.	0	1	2	3	4

Appendix F

Your Ideal Teacher Version of the Questionnaire on Teacher Interaction (QTI)

QUESTIONNAIRE ON TEACHER INTERACTION

IDEAL TEACHER QUESTIONNAIRE

This questionnaire has 48 sentences about for your view of an ideal teachers' behaviour. Think about your ideal teacher and keep this ideal teacher in mind as you respond to these sentences..

For each sentence, circle the number corresponding to your response.

For example:

	Never				Always
This teacher would express herself/himself clearly	0	1	2	3	4

If you think that ideal teachers always express themselves clearly, circle the 4. If you think ideal teachers never express themselves clearly, circle the 0. You can also choose the numbers 1, 2 and 3 which are in-between. If you want to change your answer, cross it out and circle a new number. Please answer all questions.

	Never				Always
1. The teacher would talk enthusiastically about his/her subject.	0	1	2	3	4
2. The teacher would trust the students.	0	1	2	3	4
3. The teacher would seem uncertain.	0	1	2	3	4
4. The teacher would get angry unexpectedly.	0	1	2	3	4
5. The teacher would explain things clearly.	0	1	2	3	4
6. If students don't agree with the teacher, they could talk about it.	0	1	2	3	4
7. The teacher would be hesitant.	0	1	2	3	4
8. The teacher would get angry quickly.	0	1	2	3	4
9. The teacher would hold the students' attention.	0	1	2	3	4
10. The teacher would be willing to explain things again.	0	1	2	3	4
11. The teacher would act as if he/she did not know what to do.	0	1	2	3	4
12. The teacher would be too quick to correct students when they break a rule.	0	1	2	3	4
13. The teacher would know everything that goes on in the classroom.	0	1	2	3	4
14. If students have something to say, the teacher would listen.	0	1	2	3	4
15. The teacher would let the students take charge.	0	1	2	3	4
16. The teacher would be impatient.	0	1	2	3	4
17. The teacher would a good leader.	0	1	2	3	4
18. The teacher would realise when students don't understand.	0	1	2	3	4
19. The teacher would not sure what to do when students fool around.	0	1	2	3	4
20. It would be easy for students to have an argument with the teacher.	0	1	2	3	4
21. The teacher would act confidently.	0	1	2	3	4
22. The teacher would be patient.	0	1	2	3	4
23. It's easy to make the teacher appear unsure.	0	1	2	3	4
24. The teacher would make mocking remarks.	0	1	2	3	4
25. The teacher would help students with their work.	0	1	2	3	4
26. Students could decide some things in the teachers' class.	0	1	2	3	4
27. The teacher would think that students cheat.	0	1	2	3	4
28. The teacher would be strict.	0	1	2	3	4
29. The teacher would be friendly.	0	1	2	3	4
30. Students could influence the teacher.	0	1	2	3	4
31. The teacher would think that students don't know anything.	0	1	2	3	4
32. Students would have to be silent in the teachers' class.	0	1	2	3	4
33. The teacher would be someone students can depend on.	0	1	2	3	4
34. The teacher would let students decide when they will do the work in class.	0	1	2	3	4
35. The teacher would put students down.	0	1	2	3	4
36. The teachers' tests are hard.					
37. The teacher would have a sense of humour.	0	1	2	3	4
38. The teacher would let students get away with a lot in class.	0	1	2	3	4
39. The teacher would think that students can't do things well.	0	1	2	3	4
40. The teachers' standards would be very high.	0	1	2	3	4
41. The teacher could take a joke.	0	1	2	3	4
42. The teacher would give students a lot of free time in class.	0	1	2	3	4
43. The teacher would seem dissatisfied.	0	1	2	3	4
44. The teacher would be severe when marking.	0	1	2	3	4
45. The teachers' class would be pleasant.	0	1	2	3	4
46. The teacher would be lenient.	0	1	2	3	4
47. The teacher would be suspicious.	0	1	2	3	4
48. Students are afraid of the teacher.	0	1	2	3	4