

CO-OPERATIVE LEARNING:
GROUP PROCESSING AND STUDENTS'
NEEDS FOR SELF-WORTH AND BELONGING

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An investigation into students' perceptions of the benefits of group processing, a principle of co-operative learning, on their feelings of self-worth and belonging

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Abstract

The purpose of this study was to examine students' perceptions of the extent to which group processing, a principle of co-operative learning, satisfies their needs for self-worth and belonging. Eight mature age pre-university students completed a scaled questionnaire; five of them also took part in a focus group interview, in the week following a 12 week long preliminary study into the efficacy of group processing with regard to students' learning.

The results indicated that students perceived group processing as helping them express their affective needs, and monitor their behaviours and achievements in terms of these needs. The participants perceived group processing as contributing, to some extent, to the satisfaction of their needs for self-worth and belonging. Unexpectedly and perhaps critically, students also perceived group processing as contributing to their needs for acceptance. The findings suggest that a relationship may exist between feelings of self-worth, belonging and acceptance and perceptions of the influence of group processing on these senses.

Consequently, practitioners cannot afford to dismiss the possibility that the satisfaction of students' needs for acceptance may be a vital ingredient of effective learning and teaching and that further research into co-operative learning, and group processing in particular, in relation to acceptance is likely to contribute to effective learning and teaching.

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Disclaimer

I certify that the substance of this Professional Practicum report has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this report and all sources used have been acknowledged in the Professional Practicum report.

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Muriel Francoise Strahm

Chapter 1

Introduction

In their quest to provide an education system which meets both individuals' needs and the needs of the nation, policy makers have realised that such a system must aim at developing the knowledge and abilities to co-operate and reflect. Despite the competitive nature of modern society, its efficiency, productivity and sustainability depend heavily on people's abilities to co-operate, that is, to work and achieve as a team. Researchers and practitioners have realised that the ability to co-operate depends, amongst other factors, on interaction and organisational skills and that the development of these skills can be accelerated when people reflect on their actions and achievements. Co-operation and reflection appear to be essential characteristics of people living in a knowledge-based global economy and to give direction to the purpose of contemporary education and to teachers' work (Education Queensland, 1999a).

All behaviour is an attempt to meet basic human needs. In the case of research it is an attempt at satisfying one's 'curiosity' (Stenhouse, 1981, p. 103). This curiosity, which reflects one's concern with regard to the benefits or disadvantages of a situation, leads to actions based on the hope that the outcomes of a particular situation, in a particular context, can be better predicted. This investigation grew out of the researcher's desire to experience teaching as a more professional activity by gaining a better understanding of some of the complex factors guiding effective teaching practice, such as student needs and student-centred learning and teaching methodologies. When teachers address students' needs, and students feel worthwhile and experience a sense of belonging, they are more likely to be in a positive frame of mind, to be motivated to participate in class activities and to be productive. Learning and teaching

activities which satisfy students' needs, therefore, are important ingredients of an effective education system.

In Perspective

Benjamin Franklin's quotation 'Necessity never made a good bargain', meaning that everyday requirements never substituted for achieving a main goal, can be applied to education. Examination of the purposes of education in Australia helps to demonstrate the relevance of Franklin's words. The Australian Government believes that its education system should play an important role in facing the country's economic challenges. Consequently, education in Australia has acted as a buffer between the social and economic needs of the nation, and new policies reflect the shift of focus from democratic spirit in the good times to the economic challenges of the troublesome times (Lingard, Knight & Porter, 1993). At the school level, this shift is reflected by classrooms alternating between democratic spheres of learning based on student-centred activities and co-operation, and teacher-centred, autocratic and competitive learning environments. Economic necessity, in this case, appears to deprive students of an education based on their needs. For this reason, one could argue that economic necessity does not make a good bargain as far as students' needs are concerned.

Technological improvements and social progress have contributed to new demands in the educational field since the industrial revolution. In an era where knowledge supersedes information, the Queensland education system faces the challenge of fostering a "learning society ... in which global forces favour the adaptable and the key resources will be human and social capital rather than just physical and material resources" (Education Queensland, 1999a, p. 6). This shift from a focus on narrow economic gain to one of social cohesion is in line with the report from the International Commission on Education for the Twenty-First

Century set up by UNESCO which views education as “an exceptional means of bringing about personal development and building relationships among individuals, groups and nations” (Education Queensland, 1999a, p. 33).

Focus of the Investigation

One of the aims of modern education is to empower students by helping them understand that education is a continuing process contributing to personal fulfilment as opposed to the acquisition of quickly outdated factual knowledge only. In this context, the ancient Eastern quotation ‘Give a person a fish, and you will feed them for a day. Teach them how to fish, and you feed them for life’ is fitting. A catch of fish can be paralleled to the content and fishing to the processes of a learning activity. Helping students understand the processes, like teaching them how to fish, is more relevant than presenting them with content knowledge or a serve of fish. Co-operative learning is one of several learning and teaching methodologies which aims at developing processes and understandings. Group processing is an integral part of co-operative learning and helps the group members evaluate the outcomes of their learning experiences and achievements. Hence, it is one of the foci of this investigation.

This investigation comprises two parts: the preliminary study (see Strahm, 1998) and the main study reported here. It must be stressed that the term investigation here refers to the whole research project and not just the main study. As the preliminary study laid the foundations for the main study, it has been necessary for clarity reasons to describe some facets of the preliminary study. Another reason for presenting elements of the preliminary study is that they set the scene and the context of the main study.

Group processing, more often named debriefing or evaluation in other sectors of society such as the defence forces or business organisations, is one of

several reflective processes. Whereas in reflection people either individually or collectively think about past events, with a view to understand better and be in a situation to make sound decisions, in group processing people collectively evaluate the action of group members with regard to the group goals. Group processing, however, does not prevent people from engaging in other, more general types of reflection than that formally promoted by group processing. For this reason, the term reflection, which has a broader definition than group processing, has been used in this study when the researcher felt that it was applicable. In such cases, the word reflection refers to group processing and the individual reflections that may have eventuated as a result of the implementation of group processing in a co-operative learning environment.

For three quarters of a century, theorists have presented co-operative learning as a means to teach and learn effectively. It is now well established that, provided it is based on the five principles of positive interdependence between students, individual accountability, face-to-face interaction, social skills and group processing, co-operative learning has the potential to promote school success (Johnson & Johnson, 1994; Johnson & Johnson, 1998; Kagan & Kagan, 1994). Practitioners have observed that the principle of group processing is particularly effective. How and why reflection benefits students remains to be shown and is explored in this investigation.

Another key theoretical underpinning of this research is needs theory, according to which the basic psychological needs for self-worth and belonging must be met before effective learning can take place (Glasser, 1965, 1969; Maslow, 1970). It is proposed in this research that the questions of how and why group processing benefits students relate to both needs theory and co-operative learning. While needs theory determines the conditions necessary for learning to

take place, co-operative learning has the potential to establish these conditions in the classroom.

To the author's best knowledge, apart from Glasser's covert suggestion that they could be brought together (1969, 1986, 1990), needs theory and co-operative learning have so far been addressed separately in educational research. A close analysis of the literature reveals an implicit link between needs theory and co-operative learning in general and group processing in particular; for this reason, they are treated together here. The overall aim of the research is to make the connection between needs theory and group processing explicit and to explore the extent to which they are related.

This study examines one approach to using group processing in a co-operative classroom. It explores the perceptions of participating students with regard to a particular way of implementing group processing and its efficacy for their learning as well as for their affective development. As a result, it provides teachers with a deeper understanding of how learning and teaching experiences affect students. In turn, this understanding can serve as the basis for selecting and implementing effective learning and teaching methodologies catering for students' needs. In sum, this research addresses two significant concepts: students' needs and, to a lesser extent, teachers' professionalism.

Purpose of the Study

This research grew out of the practitioner's own reflection on what secondary school students, in particular low achievers, needed most and how they could best be helped to experience some degree of success with their learning. The researcher's special interest in, and aptitude for, teaching students with special needs enticed her to be involved, in a teaching capacity, with the pre-university course which is the setting of the investigation.

The practitioner's interest in personal and professional development prompted her to attend co-operative learning workshops as well as a live talk by William Glasser (1996) which exposed the concept of 'choice theory', initially named 'control theory', and 'quality school'. The reading of Glasser's works, which, in the researcher's view, uncovered needs theory and reinforced the validity of the co-operative learning principles of positive interdependence, accountability, interaction, social skills and group processing, was to shape the first phase of this two-part investigation, the preliminary study.

The writings of other educators also influenced this investigation. Carr and Kemmis (1986), Battistich, Solomon and Delucchi (1993) and Sarason (1995) all propose that teaching is not a professional activity because it is not based on theory and research, it is not committed to the needs of the students and it does not allow for teachers' autonomy. To become more effective, teachers ought to develop an appropriate understanding of schooling which can be achieved by surveying the value system in place (Delamont, 1992) and/or critically reflecting on their own practices (Carr & Kemmis, 1986).

In brief, the main reason for this research was to investigate and formalise the analysis of educational experiences which promote effective learning. Based on needs theory and co-operative learning principles, the research presents evidence for, and aims at facilitating the adaptation of, both the practitioner's teaching methodologies and the students' learning strategies. This study analyses and critiques the implementation of group processing with regard to the students' perceptions of the influence of group processing on their basic psychological needs for self-worth and belonging. It is relevant because the outcomes of learning experiences depend on the type of activity, how it is implemented and the participants' perceptions of the outcomes of such experiences.

Despite evidence in favour of student-centred methodologies (Buckmaster, 1994; Glasser, 1969; Johnson & Johnson, 1985; Kagan, 1994; Lucker, Rosenfield, Sikes & Aronson, 1976; Sapon, 1994; Slavin, 1995; Sutton, 1992), co-operative learning is not widely accepted by teachers (Hill, 1994; Johnson & Johnson, 1994; Sarason, 1995). More recently, though, the large number of teachers from around Australia who attended the 1998 Australasian Association of Co-operative Education (AACE) Symposium in Sydney could be an indication that the interest in co-operative learning is spreading (Dr. B. Moriarty, personal communication, 3 February, 2000).

Many teachers have experimented with co-operative learning but relatively few have persevered because of difficulties attributed to a combination of factors including a change of balance of power. A successful shift towards co-operative learning necessitates an understanding of the forces at play, namely a shift from teacher-centred and autocratic classrooms to student-centred and democratic circles of learning. This shift needs to be followed by a change of principles and values; such a change can be promoted by research and can increase teachers' professionalism. Hence, this investigation is not only appropriate but also timely.

This study is the second phase in a two-part investigation which aims to explore the relationship between group processing and students' perceived senses of self-worth and belonging in a co-operative learning environment. While the preliminary study examined how the implementation of group processing can benefit students' learning in a co-operative environment, the main study reported here analyses the students' reactions to, and their perceptions of, reflection in regard to their senses of self-worth and belonging. The findings of the overall investigation can be used to sensitise both teachers and students to the learners' basic psychological needs, and help first to identify, then to satisfy these needs in

a co-operative learning setting.

Group processing can follow either the counselling model (self-examination) or the feedback model (Yager, Johnson, Johnson & Snider, 1986); it may be conducted in large and small groups; it may be teacher- or student-led (Johnson, Johnson, Stanne & Garibaldi, 1989) and it may be preceded by instructions about how to process the group session (Kennett, Stedwill, Berrill & Young, 1996). In this investigation, the different models of group processing were all implemented at one time or another. The teacher-researcher often chose one model because it suited a particular situation. At times, however, students suggested that a particular model would be more appropriate than another.

The investigation differs from previous research projects on group processing, the findings of which indicate that group processing promotes learning. More specifically, group processing was found to influence the development of both interaction competencies (Bellanca, 1992; Cohen, 1986; Hubert & Eppler, 1990; Kagan, 1994) and conceptual understandings (Hamm & Adams, 1992; Robertson, Davidson & Dees, 1990; Sharan & Sharan, 1992). It must be noted, however, that information about the type of group processing used in some of these studies was unavailable. In most research projects, findings suggest that generally group processing benefits students. It seemed logical to undertake research that would build on these findings; for this reason, this study focuses on how and why group processing can contribute to effective learning, more precisely, on the extent to which students perceive group processing and its influence on their feelings of self-worth and belonging.

Definitions

Co-operative learning is defined here as a learning and teaching methodology based on small groups working towards a common goal. Educational research into co-operative learning over the last three decades has identified a number of factors affecting the outcomes of co-operative methods. These interrelated factors can be grouped into structures and principles. The structures include the ways that tasks are organised to achieve specific goals as well as the composition and management of groups or learning teams. Structures and principles are equally important. Effective structures, however, are principle dependent; thus, a clear understanding of the five principles of positive interdependence, individual accountability, face-to-face interaction, social skills and group processing is vital.

In a co-operative learning setting, the group's success depends on the individual contribution of each member because the learning of one member affects the others. This sine qua non condition of co-operative learning is called positive interdependence (Johnson & Johnson, 1994). It can be supplemented with joint rewards, divided resources and complementary roles so that students realise that they depend on each other (Johnson, Johnson & Smith, 1998).

Positive interdependence can be enhanced by the second principle, individual accountability. True co-operative learning structures ensure that individuals are each responsible and feel answerable for their own learning and their own contributions to the group (Kagan & Kagan, 1994). To become accountable or responsible, students require involvement in activities which promote participation (Johnson & Johnson, 1994). Class norms such as asking for and offering help, being courteous and supportive can be encouraged, for example, by assigning roles to group members. These could include the roles of

task manager, researcher, reporter, encourager or time-keeper as was the case in the early stage of this investigation. Task rotation will ensure that all students are given the opportunity to learn the different skills associated with each task.

Another way to promote accountability is to have students each take a leadership role in researching a particular part of the work to be studied and teaching the other students what they have discovered. This approach constitutes the basis of Group Investigation (GI), a structure which was used in the last weeks of this investigation.

Co-operative learning, through small group activities based on the principle of interdependence, promotes face-to-face interaction in the classroom. Kagan (1994) and several other writers (Hamm & Adams, 1992; Johnson & Johnson, 1994; Wells, Chang & Maher, 1990) proposed that the principle of simultaneous interaction is the stepping stone to both increased motivation and cognitive gain of students in co-operative learning settings. In contrast, sequential interaction where students speak in turn, one at a time, and listen to the teacher for most of the lesson (Kagan, 1994), when it operates at the class level and is sustained, can lead to boredom and lack of achievement.

Student interaction serves several important functions; as well as increasing both motivation and achievement, it provides intellectual stimulation. Most important is the Piagetian notion that, together with verbal communication processes, interaction plays a vital role in the construction of knowledge (Hendry, 1996; Slavin, 1995). This philosophy is based on the premise that knowledge is constructed from within, through social action, in particular discussion, explanation and evaluation of thoughts and processes. The sharing of knowledge and interpretations differentiates co-operative learning, in which students and teacher learn together, from traditional methodologies in which the reliance is mainly on

the students learning from the teacher.

Co-operative learning involves a group of people acting together for the common purpose of learning; thus, the ability to deal with people is a prerequisite for the success of such an enterprise. As this ability is not innate, interpersonal skills need to be developed (Cohen, 1986; Johnson & Johnson, 1994; Kagan, 1994; Sharan & Sharan, 1992). Kagan firmly believes that the acquisition of social skills is best achieved through a structured approach, based on the premise that such skills need to be modelled, practised, reinforced and reviewed. Mastery of social skills results from planned practice supported by regular feedback, evaluation and reflection about the interaction of the group members. In the context of co-operative learning, these mechanisms are often referred to as group processing.

Group processing, the act of reflecting on and evaluating the group's achievement, is important for two reasons. First, group processing enables group members to identify effective behaviours and possible improvements to maximise their learning. Second, the evaluation of each member's contribution to the group's task promotes the other co-operative learning principles. Hence, group processing can act as the agent keeping it all together.

The opportunity for students to reflect and give feedback to the group promotes individual accountability. Students have an incentive to be responsible because they know that their behaviour and actions will be evaluated. At times, students will also informally assess the other group members. The potentially threatening aspect of the process is minimised because students can voice their opinion, feel included and have some control over the process and the content of the evaluation. Group processing may satisfy students' needs for acceptance and self-worth as the possibility of not being accepted or recognised within the group,

a likely consequence of group processing, can act as a motivator. Concurrently, this motivator can reinforce the principle of individual accountability.

Group processing allows students to reflect on the way group members interact with each other and on the influence of this interaction on the group's achievement. Group processing can also empower students to take an active role in the evaluation of their progress with regard to the acquisition and mastery of social skills. Group processing, therefore, facilitates and promotes the implementation of the other co-operative learning principles. For this reason, it deserves the full attention of researchers and practitioners.

Overview of Methods

This study examines the proposition that co-operative learning has the potential to contribute to meeting students' psychological needs. More specifically, it investigates the extent to which students perceive group processing, a principle of co-operative learning, as influencing their senses of self-worth and belonging. Satisfaction of the basic psychological needs for self-worth and belonging allows students to concentrate their efforts into meeting other needs such as intellectual ones; therefore, the satisfaction of basic psychological needs is a necessary condition of effective education (Glasser, 1965; Maslow, 1970).

The co-operative learning strategies implemented in this investigation rested on the principles of positive interdependence, personal accountability, face-to-face interaction, social skills and group processing. The co-operative structures initially used in this investigation were those of Think-Pair-Share (TPS) and Pairs-Compare (PC), both of which were based on Kagan (1994). Second, Group Investigation (GI), a more complex structure grounded on Sharan and Sharan (1992), and for which base groups of three to four students were formed, was also implemented.

The TPS structure involves students who work individually on a question, write their answer before they pair off with another student. Students then take turn, share and discuss their ideas before they form a joint response. TPS activities can be succeeded by the PC structure in which two pairs join to form a foursome and discuss the respective joint responses to produce a combined result or solution.

GI is the most complex co-operative structure; it involves groups of students investigating different topics and using a variety of resources. Group members organise themselves so that each student is responsible for a different but complementary area of the group project. GI culminates with each group presenting its work to teach the rest of the class.

This investigation was conducted over a period of 13 weeks, in a natural classroom setting. Further to previous studies into co-operative learning which compared different learning environments and which relied on empirical research methods using large samples (Slavin, 1995), the main study focused on the students' perceptions of group processing. To this end, the data gathering methods comprised a scaled questionnaire and a focus group interview. It was considered that a focus group interview would best allow students to express themselves freely and fully, and the researcher to ask for clarifications if required.

Background

The participants in this investigation were 8 mature age, pre-university students at a regional campus of an Australian University. These students were chosen for several reasons. As these students were taught by the researcher, not only were the practicalities of conducting research convenient but also a trusting teacher-students relationship had already been established. In addition, this was possibly the first study into co-operative learning involving students at this level.

Ethical clearance was not required from the University because, at the time, this study was not part of a research-based degree. A request for ethical clearance was, however, completed and forwarded to the panel for their comments. The exercise guided the way in which ethical issues were addressed. Ethical clearance was obtained from the course co-ordinator. The context, purpose and benefits of the research were explained to the students. The proposed schedule of activities and their rights to anonymity and to withdraw were made explicit to students and their questions were answered. A summary of the relevant information, including the research supervisor's name and telephone number, together with, should they decide to volunteer, a consent form awaiting their signature was distributed to students.

It is hoped that the results of this study will be used to help teachers in their quest to gain a better understanding of the complexity and interrelatedness of the social, economic, affective and intellectual factors influencing education in an environment where human development and knowledge are becoming increasingly more important than physical resources. More specifically, it is anticipated that this research will help teachers to implement effective learning and teaching strategies, that is, to better cater for students' needs and allow them to become valuable local human resources in a global knowledge economy which is dependent on people's abilities to co-operate and to use reflection as an aid to becoming productive life-long learners.

This chapter has introduced the focus, purpose, methods and background of the present investigation. It is followed by a literature review of the relevant areas, needs theories, co-operative learning methods and reflection, in Chapter 2. Chapter 3 describes the research methods while Chapter 4 presents the results of the study. Chapter 5 communicates the conclusions of the research.

Chapter 2

Literature Review

For the purposes of this investigation, the foci of the literature review have been needs theories and co-operative learning methods as well as the characteristics of one of the five principles upon which co-operative learning is based: group processing, more generally known as reflection. This review uncovered links to early theories about the roles played by the satisfaction of basic psychological needs and by reflection in the construction of affective and cognitive knowledge. Research on co-operative learning has established that this approach is most effective when it is based upon the five principles of positive interdependence, individual accountability, face-to-face interaction, social skills and group processing. As the predominant focus of this study was group processing, and because co-operative learning as a whole was used throughout the investigation, an overview of co-operative learning helped to place group processing in context.

Both theoretical areas of students' basic psychological needs and co-operative learning provide vital insights into learning and teaching. While needs theory exposes the conditions necessary for learning to take place, co-operative learning is based on principles which set the conditions necessary for learning. Hence, it seemed logical to treat both areas together. The connection between the two areas of psychological needs of students and the principles of co-operative learning, of which group processing is one, has been mentioned in passing by Glasser (1969) and Gossen (1993) but, to the author's best knowledge, has not been tested or investigated.

The first section of this chapter examines needs theories and the role education plays in developing responsibility and helping satisfy students' basic

psychological needs. The second section presents a critical but succinct overview of the research concerning co-operative learning. The third section introduces reflection and group processing. It includes some current findings regarding not only the efficacy, but also the implementation, of group processing.

Needs Theories

Effective and successful professional classroom practitioners, be they at the primary, secondary or tertiary level, base their teaching on educational psychology, that is, on theories of learning and principles of psychology (Slavin, 1988; Woolfolk, 1993). These theories have the potential to enable teachers to be proactive as well as reactive in their approach to helping students develop effective intellectual and social skills. Knowledge of educational psychology has the potential to prevent or reduce learning and behavioural difficulties. Needs theories, in particular, have the potential to contribute to the pursuit of effective education because the satisfaction of students' psychological needs is a *sine qua non* condition for learning.

Needs theories are based on the premise that all behaviour is a reflection of the individual attempting to meet a need and that unproductive behaviour is a result of people not having their basic needs satisfied (Glasser, 1965, 1969; Jones & Jones, 1995; Woolfolk, 1993). The relevance of needs theories to education is two-fold. First, they have the potential to shed some light on the undesirable and unproductive behaviours of students. For example, students' poor behaviour in the classroom is often an attention-seeking strategy (Rogers, 1990) aimed at the gratification of their need to feel worthwhile. Carnegie (1984, p. 47) referred to the need to feel worthwhile as 'the desire to be great' and 'the desire to be important' and postulated that this is a characteristic distinguishing mankind from animals and is one of the main reasons for the development of our world.

Even after advances in the field of psychiatry, the basic premises upon which needs theories are based are still valid today because basic human psychological needs have not changed. Despite the fact that these basic needs have been well known and accepted for some time, the issues they raise with regard to education and co-operative learning have, to the researcher's best knowledge, been neither fully identified nor explored to any great depth.

Second, Maslow's (1970) hierarchy of needs, whereby the basic physiological and psychological needs are lower-level needs and the needs to know and understand are higher-level needs, suggests that the lower-level needs must be met before people are motivated by the higher-order needs. This distinction is important for educators as it implies that students' needs for survival, belonging and self-worth must be met before academic goals can be achieved. For example, a hungry child will strive to satisfy a pang of hunger before anything else. Students from broken families will be more interested in satisfying their need to belong than learning to spell (Woolfolk, 1993).

Despite the fact that barriers to needs' satisfaction may differ slightly between primary and university settings, the hierarchy of needs applies to all age-groups including adult learners. The need to belong has been identified by both Glasser (1965, 1969) and Maslow (1970) as a basic psychological need. Its satisfaction frees students to strive for fulfilment of higher level needs such as achievement. Accordingly, basic psychological needs such as those for self-worth and belonging must be met before students are ready to commit themselves to learning.

Awareness and understanding of needs theory, the concept of intrinsic motivation to satisfy psychological needs (Slavin, 1988), can result in teachers providing relevant and fulfilling learning activities for their students. Activities

based on students' needs have been shown to increase students' motivation and success (Glasser, 1969, 1990; Gossen, 1993). In addition, recent theoretical development, substantiated with research findings, reveals that success or failure has an impact on how students perceive their capabilities. This self-perception, named self-efficacy, in turn, affects students' motivation, behaviour and achievement (Bandura, 1986; Benard, 1999; Moriarty, 1993). Thus, need satisfying activities, which influence motivation and success, together with self-perceptions, may be the starting and central point of a spiralling process. This expanding process may, in turn, have long term effects for the development of the student, both as a person and as a learner.

Teaching approaches based on needs theories can contribute to establishing and maintaining classroom discipline (Gossen, 1993). Many educators support the view that classroom discipline is a requirement of an environment where effective education can take place. In view of needs theories, which explain students' poor behaviour as a strategy to meet their needs, classroom discipline rests on teachers' abilities to help students satisfy their needs. If it is to be productive and long lasting, discipline, in this context, means self-discipline based on responsibility for one's own development and learning.

Overall, the literature review on needs theories inferred that teachers play a vital role as far as providing the ingredients necessary for the satisfaction of their students' needs and for effective learning and teaching. In sum, three points upon which teachers have input emerged from this review. First, students' needs influence their behaviour because people's actions reflect their attempt at meeting their needs. Second, the satisfaction of students' intellectual needs is preceded by the satisfaction of their basic psychological needs such as those for self-worth and belonging. Third, paramount in meeting their basic psychological needs are

students' levels of responsibility which, to a certain extent, hinge on their social skills. Despite the fact that social skills play a key role in the development of responsibility, it is the level of responsibility which appears to be a vital ingredient of an effective education system.

Development of Responsibility

Schofield (1999) has argued that one of the purposes of education and, therefore, one of the multifarious and perhaps most important tasks of classroom practitioners in the 21st century, is the development of responsible citizens. The teaching of responsibility requires love and discipline: children consistently test grown-ups for the reassuring signs that someone cares enough to help them meet their needs (Glasser, 1965, 1969) before they can accept what adults have to offer and commit themselves to learning. Responsibility can be hindered by the temptation to choose instant, minor rewards instead of significant, need satisfying ones (Glasser, 1965). Stickers and grades, for example, if used repeatedly and in isolation, are likely to aggravate the situation because they are extrinsic motivators (Biggs & Moore, 1993; Gossen, 1993; Kohn, 1991). The development of responsibility can be viewed as a continuous process demanding strong self-discipline and greatly facilitated by intrinsic motivation, the rewards of which are significant and long lasting. Furthermore, intrinsic motivation, which has been related to having 'a sense of compelling future' (Benard, 1999), is believed to be linked to organisational skills such as goal setting and evaluating.

Social skills have been found to play a significant role in the development of responsibility. According to theorists and practitioners, social skills such as listening, accepting, giving and receiving help and communicating need to be taught (Glasser, 1965, 1990, 1994; Gossen, 1993; Graves & Graves, 1985; Johnson & Johnson, 1991, 1994) as students displaying poor social skills in

classroom situations do so because they do not know how to interact positively with others (Kagan, 1994). The author believes that the development of responsibility does not happen naturally; it needs to be engineered, that is, planned, encouraged, scaffolded, reinforced, evaluated and maintained. In other words, judicious choice of learning activities can enhance responsibility; more specifically, co-operative tasks, which rely on the principles underlying co-operative learning, promote self-discipline as a means to achieving group goals and, therefore, responsibility (Glasser, 1965).

Glasser believes that to remedy irresponsible behaviour and move from low- to high-levels of responsibility, three progressive steps should be followed. First, through emotional involvement with a non-judgmental helper, the person must face reality and acknowledge the unrealistic behaviour. Second, people need to know when they are acting in an irresponsible manner. In addition, students need to know what they are doing well so that successful strategies can be repeated (Slavin, 1988). It has been shown that immediate feedback reinforces good behaviour, promotes learning and acts as a motivator; however, it is vital that students understand how they can change their behaviour (Woolfolk, 1993). Third, in a process where the role of students is one of learning partners with each other and with the teacher, and that of the teacher is one of facilitator, new skills and better ways to meet one's needs have to be discussed and learnt.

The teacher's power of observation will contribute to choosing an appropriate sequence of social skill development (Kagan, 1994). In addition, the provision for reflection, evaluation and feedback, which characterises co-operative learning at its best, will help students to develop their socialising skills. The teacher's awareness of the students' different needs, coupled with the ability to provide the necessary training at the right time, will contribute to the social

development of the individuals in the short term, as well as the group and social progress in the long term (Kagan, 1994). In this sense, the teaching of responsibility enhances effective education (Glasser, 1965, 1969, 1986, 1990).

School Success and Students' Psychological Needs

The major influence on students failing in inner city schools in Los Angeles in the 1960s was perceived to be the high concentration of social, environmental and cultural problems. Glasser's study (1969) linked students' poor attitude with feelings of hopelessness and resignation, and also with the belief in failure. Furthermore, it questioned the system: a system which blamed school failure on the students' disadvantaged social heritage, allowed student failure on a large scale and met neither the children's needs nor society's expectations. Perhaps more importantly, such a system has the potential to prevent the younger generation from developing self-confidence, self-esteem and a positive approach to life in general.

Glasser (1969) attributed school failure to the system's inability to meet the basic needs for self-worth and love or belonging. Such views, although extremist, have important implications for classroom teachers as they may indicate that the traditional, competitive system is conducive to failure. For example, could the strong competition at high school level be one reason for secondary students losing the radiance they displayed when they first started school? This could be because, in a competitive system, there is space for only one winner, with the unhealthy undertone that there are many losers. Should this be the case, the implications could reach much further than first anticipated as there is some evidence that 'success/failure generates success/failure' and that students spend more time on task in a co-operative setting than in a competitive situation (Punch & Moriarty, 1997).

Both needs for love and self-worth can be fulfilled at home and at school. Educators have little control over the home environment. More importantly, if the home environment is lacking socially and emotionally, the school then becomes one of the child's most likely places to experience love and belonging, self-worth and success. At the school level, the need for love can be translated into a need for social responsibility, for looking after and caring for each other (Glasser, 1969). In addition, the development and maintenance of a high 'trust bank account' within the group is perceived both by theorists and by practitioners as being a key element of effective communication and the linchpin to successful relationships (Buckmaster, 1994; Covey, 1994). Listening skills, also important for effective communication, satisfy the needs for self-worth and worth to others because the attention of an audience is an indication of the significance of the message. In turn, it appraises the speaker. Involvement with others, the development of social and academic skills, coupled with the acquisition of knowledge and thinking, then becomes the main objective of an education system aimed at meeting students' needs (Glasser, 1969).

Many of Glasser's ideas, although radical and not based on empirical research, are logical. These ideas served as a basis for several behaviour management plans written in an attempt to reduce discipline problems in Queensland (Queensland Department of Education, Capricornia Region, 1994-1996). Glasser's contribution to education is four-fold. First, his theory reminds teachers of the relevance to encourage students to concentrate on what they can change, their thoughts and actions, instead of agonising over past events, blaming other people for their problems or trying to change the behaviour of others. Second, he depicted the school system as devoid of relevance to the outside world. For example, repetitive tasks, taken out of context, such as some

mathematics practice exercises, have limited educational value (Grace, 1997).

Third, he believes that the learning activities do not cater for the emotional and social involvement necessary to gratify the needs to feel safe and to belong. Thus, the system fails its original objectives of preparing students for the real world and meeting students' needs. Fourth, he considered that schools, instead of producing success identities by meeting the children's needs for self-worth and social responsibility, are places where most students develop a failure identity (Glasser, 1969).

Based on her practice, the writer upholds the belief that Glasser's conclusions, despite highlighting the negative facets only, are valid. When several factors are associated with a malfunction, every aspect needs to be addressed for the problem to be fully resolved. Downsizing or ignoring a problem on the evidence that overall results are satisfactory represses the potential for an increase in quality.

Fulfilling the need for social responsibility may be the most important objective of our education system (Glasser, 1972; Schofield, 1999) as social problems may be more difficult to solve than technological ones. Whereas both types of problems require the confidence, strength, understanding and sound judgement necessary to making effective decisions, these decisions are perhaps more critical when they try to address a social problem. One reason is that social problems usually take more time to redress than technical ones because they depend on people changing their attitudes and behaviours. Thus, sound decision making with regard to social issues is particularly important.

Sound decision making is enhanced by higher order thinking processes such as planning, evaluating and reflecting, the development of which are more readily achieved in some learning environments such as that found in co-operative

learning (Glasser, 1969; Kagan, 1994; Sharan & Sharan, 1992). One of the reasons why co-operative learning is particularly suited to foster new attitudes and behaviours is that, like any education system working towards meeting students' needs, it requires a shift from the traditional teacher-centred to student-centred situations where both teachers and students share the power to choose what is to be learnt and how learning will occur. The role of teacher is one of leader instead of boss/manager and coercion is replaced by co-operation (Glasser, 1990).

Another consideration is the changing nature of needs. Students all have the same psychological needs for self-worth, love or belonging, self-esteem, freedom of choice and fun; nonetheless, the strength of each need is different for some people than for others and the priority of each need varies with time (Glasser, 1994; Maslow, 1970; Slavin, 1988). Thus, a flexible approach, one that is student-centred, is more suited to meeting the individual needs of students irrespective of their age and of the level of the educational institution to which they attend.

The idea of effective learning emerging from this review is based on the proposition that students require social and organisational skills to be able to meet their psychological needs; thus, classroom interaction plays an important role. Classroom interaction is more likely to fulfill the students' psychological needs when it takes place in a co-operative rather than a competitive or individualistic environment. Co-operative classrooms allow for positive and supportive interactions which have the potential to satisfy students' needs for self-worth and belonging. For these reasons, the next section of this chapter will present an overview of some aspects of the research into co-operative learning. It will summarise the main stages as well as the key outcomes of the relevant research.

Co-operative Learning

In early societies, co-operation was a natural mode of survival learned through daily life activities. Since the first century, philosophers and theorists have presented co-operation as an empowering living and learning experience. For the last three quarters of the 20th century, the benefits of co-operation have been exposed as a means to teach and learn what matters, and promote effective education in schools and colleges. During this time, research has focused on co-operation to validate and refine early theoretical work. First, studies centred on comparing a co-operative model of learning with competitive and individualistic models (Johnson & Johnson, 1979). Once the efficacy of co-operative learning had been confirmed and the legitimacy of the research methods used towards this end had been established, research engaged in the exploration of factors which promote the productivity of co-operative groups.

Early research on co-operation was characterised by studies comparing co-operative, competitive and individualistic models of learning. In an effort to settle the debate about which model benefited students most, the Johnsons developed an extensive library of studies on co-operative learning. The ensuing meta analysis of studies spanning more than 60 years concluded that co-operative learning promotes higher individual achievements than competitive or individualistic approaches (Johnson & Johnson, 1985; Johnson, Maruyama, Johnson, Nelson & Skon, 1981). Following this generalisation, ideological conflicts concerning the desirability of certain elements within co-operation resulted in lengthy debates. While other parties took part in these debates, the key participants from the perspective of this study were Slavin and the Johnsons. The main substantive issue challenged in the Johnsons-Slavin controversy was whether extrinsic rewards, in the form of team rewards, are the linchpin to

motivation. Team rewards provide members with an incentive to help each other learn and succeed (Slavin, 1995); this strategy, however, “is very teacher dominated, has a competitive orientation and is tightly controlled and hierarchical” (Hill, 1994, p. 16). Competitive situations require referees and tighter discipline; in addition, teacher-dominated environments do not foster individual responsibility because to become responsible one needs to have some control over the situation. Hence, Hill’s point is valid. A possible argument balancing Hill’s, though, is that the competitive element of Slavin’s approach can be considered as beneficial because it caters for different learning styles and different needs.

Another point of discussion between the advocates of co-operative learning was whether goal and resource interdependence were necessary elements of a productive co-operative approach to learning. While improved academic achievements have been perceived by Slavin as the main outcome of interdependence, the Johnsons consider the social and non cognitive outcomes just as, if not more, important. Despite the fact that the line of interest and perceptions of the Johnsons do not exactly match Slavin’s, they basically agree that interdependence is a vital building block of any type of co-operation.

Cohen (1994) argued that the Johnsons-Slavin debate was fruitless, perhaps because their views were anchored in different theories. While the Johnsons believed in social interdependence and cognitive developmental learning theories, Slavin was influenced more by behavioural learning theories. The debate, nevertheless, strengthened the positive findings concerning the benefits of co-operative learning and benefited both parties by increasing their knowledge and understanding. Twenty years later, it is interesting to see that the Johnsons acknowledge the possibility of supplementing the principle of positive interdependence by “adding joint rewards ... [and] divided resources” (Johnson,

Johnson & Smith, 1998, p. 29). This is perhaps an indication of a more open or wider perspective than that adopted in the debates. Furthermore, the Johnsons summarise their latest understanding of the principle of positive interdependence by referring to the catch phrase “students must believe that they sink or swim together” (Johnson et al., 1998, p. 29). The debate did not lead to any new discovery; however, it enticed some agreements and helped to confirm the solidity of work such as that of Deutsch more than half a century previously.

So far, research evidence supporting the social and academic benefits of co-operative environments far outweighs the negative reports and is consistent with practitioners’ observations (Buckmaster, 1994; Lucker et al., 1976; Sutton, 1992) that improved behaviours and achievement, and increased motivation, are some of the benefits of co-operative learning. It was logical for the next endeavour of research into co-operative learning to identify the factors affecting the outcomes of co-operative methods. These interrelated factors, some of which had been alluded to by Deutsch, can be grouped into structures and principles. Whereas the structures include the tasks to achieve specific goals as well as the composition and management of groups or learning teams, the five principles comprise positive interdependence, individual accountability, face-to-face interaction, social skills and group processing. These principles constitute the core of Slavin’s (1995) summary of the status quo of co-operative learning, that under certain conditions, co-operative learning can consistently result in improvements in achievement, interpersonal skills and self-esteem. Some of these conditions had been intuitively comprehended by educators; they were confirmed by the findings of research into specific components influencing the outcome of co-operative learning.

The structures which were used in the present investigation, Think-Pair-Share (TPS), Pairs-Compare (PC) and Group Investigation (GI), have

been the subject of several research projects. In a recent study, which might be the first of its kind, Lucke (1998) examined simple, short-term co-operative structures and their perceived effects on metacognition and motivation with two Year 12 English classes. It was found that students thought that, cognitively, they benefited most from the structures of TPS and Inside-Outside-Circle (IOC) and that they were most motivated to participate in PC. Students indicated that TPS and PC helped them to clarify and explain their ideas and that PC was enjoyable and pleasant and enabled them to access good ideas. The results also indicate that when students perceived PC as being least beneficial it was because the process was perceived as having been too rushed.

Another structure, more complex than TPS, was used in this study: Group Investigation. GI has been the focus of a number of solid, long term studies by Sharan and Sharan (1989-1990) spanning a period of 12 years. It needs to be stressed that, on several occasions, co-operative learning was implemented during the whole year preceding the studies which were of several years' duration (Sharan, 1980). The results indicated that, compared to students working in a whole class approach, students working under a GI regime demonstrated equal acquisition of information but greater academic achievement, better interaction skills particularly in inter-ethnic situations and better spoken language skills. It is worth stressing that in GI settings, lower-class children spoke as well and as often as middle-class children, whereas in the whole class situation middle-class students dominated verbal communication. The language used by teachers in GI was also found to be more beneficial because it was more intimate, supportive and encouraging and it provided individual feedback and praise whereas in the whole class approach teachers were found to be lecturing, asking closed questions and addressing discipline and/or praise collectively. Overall, Sharan's

contributions to research indicated that, as a learning and teaching approach, GI benefits students. Given the length of the research projects and the thorough preparation that took place in the year before the investigations, Sharans' findings are most valuable.

Structures and principles are equally important; however, effective structures are principle dependent. This means that no matter what structures are used to set in motion learning activities the five principles must be present for the activity to be co-operative. While all five principles were implemented in the learning activities that took place in this study, one of them, group processing, sometimes referred to as debriefing, evaluation or, more generally, reflection, has been the focus of this review. This review uncovered links to early theories about the role that both individual perceptions and reflection play in the construction of affective and cognitive knowledge. The next section of the paper first defines reflection and group processing; it then establishes the conditions of implementation upon which the effectiveness of these reflective processes rests.

Reflection

In educational contexts, reflection takes the meaning of "intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understanding and appreciation" (Boud, Keogh & Walker, 1985, p. 7). Boud et al.'s emphasis on the affective aspects of learning is particularly relevant in this study because it has the potential to support the hypothesis that the satisfaction of students' needs for self-worth and belonging contributes to effective learning.

Schon (1991) refers to Dewey's concepts that knowledge differs from understanding, and that reflection is the main factor between knowledge telling and knowledge transforming. This critical dimension of Dewey's belief supports

the idea that reflection is an integral part of learning and emphasises reflection as a purposeful activity and a means of both knowledge construction and empowerment. Since Dewey, the significance of reflection in education has been informally observed and reflection identified as increasing students' abilities to recover from negative experiences (Berliner & Benard, 1995). Recently, personal development and management courses have contributed to a new awareness that reflection and evaluation of one's own actions is central to both personal and organisational development because it enhances human inner resources (Covey, 1994; Glasser 1994). In sum, reflection is a powerful learning tool with regard to the acquisition of social skills (Kagan, 1994) because these social skills are crucial to the productivity of co-operative learning groups.

Compared to the volume and diversity of research on co-operative learning, research focusing specifically on reflection, within co-operative learning, has been relatively scarce. Similarly, awareness and acceptance of reflection as a means to learn and grow, according to Boud et al. (1985), is not overt in most of today's classrooms. The theory, research and, to a lesser extent, practice of co-operative learning, however, expose group processing as a valuable learning strategy.

Group Processing

Group processing, or the act of reflecting on how a group of people work together, is a specific example of reflection in action. In line with the overall purpose of reflection, the aim of group processing is to maximise the benefits of the learning experience. The view that students' discussion of group processes promotes learning has been well supported (Bellanca, 1992; Burron, James & Ambrosio, 1993; Cohen, 1986; Hubert & Eppler, 1990; Johnson & Johnson, 1990, 1994; Kagan, 1994; Sharan & Sharan, 1992; Thousand, Villa & Newin, 1994).

The overall purpose of group processing is two-fold: it facilitates effective

group interaction and, as a result, maximises the potential of the group's achievements (Johnson & Johnson, 1990); it is, therefore, important to take lesson time for group processing. At its most basic stage, group processing aims at identifying helpful and unhelpful behaviours as well as deciding which behaviours should be encouraged and which should be modified so that the group goals can be achieved (Kagan, 1994). Positive interactions create an emotionally safe environment which Mezirow (1991) has identified as a factor influencing learning because students learn best when they feel sufficiently secure to do so.

Disagreements between team members can hinder collaboration, the backbone of successful group work. While differing views may stimulate discussion and encourage knowledge construction, diverging opinions, if poorly managed, can quickly turn into destructive conflict. For this reason, more recent research by Johnson and Johnson (1996, 1998) has focused on conflict resolution. The research methods followed by Johnson and Johnson in these studies differed from comparative approaches which examined the effect of co-operation, competition and individualisation on students' behaviours or achievements. In addition, instead of conducting one individual study, Johnson and Johnson undertook a collection of 14 studies regarding the implementation of a Peacemaker Program from Kindergarten to Junior High School. The outcome of their research project indicated that, following the implementation of these programs, not only did the number of discipline problems decrease but also academic achievement and long term recall of academic content increased. In view of these findings, Johnson and Johnson have redefined group processing so that it includes maintaining effective working relationships as well as discussing how well group members are achieving their goals.

Once students master the basic social skills necessary to work in a group,

group processing can be extended to include the construction of cognitive knowledge, perhaps because the development of interaction competencies both precedes and paves the way for the development of conceptual understanding. Hamm and Adams (1992), Robertson et al. (1990), Sharan and Sharan (1992) all included the processing of the academic experience, that is, the strategies, the processes and the successes, as means of developing conceptual understanding. In the context of co-operative learning, the ultimate knowledge sought after is emancipatory; that is, knowledge which allows for "a more inclusive, discriminating and integrative understanding of our experiences" (Mezirow, 1991, p. xvi). The implementation of group processing is designed to facilitate the construction of particular types of knowledge, ranging from instrumental, which relates to the technical content of the environment, to emancipatory, depending on the developmental stage of the group.

In addition to group processing per se, Kagan (1994, p. 20:14) suggested activities enabling students to turn learning into a meaningful experience and, as a result, own their knowledge and understanding. Referred to by Kagan as 'closure', this part of the lesson shares characteristics with what others have incorporated in group processing. For example, Bellanca (1992) concentrated on issues such as how social skills help group achievement, how students help each other develop a particular social skill and, further, how this skill can be applied to other situations. In short, Bellanca, like Kagan, aimed at helping students to establish relationships between the school environment and the outside world.

To be effective and beneficial, group processing must be managed and teachers must become engineers rather than technicians. Johnson et al. (1989) suggested that instruction on group processing impacts on the achievement of students working co-operatively. More specifically, teacher-led group processing

influenced individual achievement and group productivity, and student-led group processing had an even greater impact on the group performance; thus, it leaves open for future investigations the possibility of a compounded effect when teacher- and student-led group processing are combined. Students are likely to be more receptive to their learning partners' suggestions than those of teachers. Teachers, nevertheless, can model reflective processes which are appropriate and effective; furthermore, they can contribute to the evaluation process in ways which are out of the reach of most students.

In their roles of facilitators, teachers must ensure that reflective processes help learners develop an awareness of the concept of learning because, as Mezirow (1991, p. xvii) pointed out, "Learning difficulties grow out of distorted concepts about formation and use of knowledge". Beside students' skills and values, teachers need to consider other factors which also influence the outcomes of reflective processes, such as the students' backgrounds.

Students' past learning experiences have been recognised to shape both their perceptions of the world and their self-perception; these perceptions have been identified as keys to effective learning processes (Boud et al., 1985). First, self-perception appears to determine whether students regard themselves as successes or failures (Glasser, 1965). Second, the success or failure identity students hold of themselves influences their self-confidence, behaviour and achievement (Moriarty, 1993). There is also evidence that 'success/failure generates success/failure' (Punch & Moriarty, 1997). In addition, Gibbs (1981), Boud et al. (1985) and Mezirow (1991) all identified an emotionally safe environment as being paramount to students' self-esteem remaining intact. For this reason, reflection should be implemented as a non-threatening process, enabling learners to use past experiences as stepping stones to developing a

positive self-image and increasing their self-confidence and productivity.

In the context of this study, group processing is broadly delimited by the following five questions which have been chosen with a view to increasing students' understanding of a particular situation, to help them see the situation as it really is, and to identify and try to meet their needs. These questions are:

1. What was meant to happen in the lesson?
2. What actually happened?
3. How did it feel?
4. What can be learned from this experience?
5. What are our next goals?

Starting with a recollection of the objectives of the lesson, a description of the event and the feelings generated by the occasion, the process of reflection then examines the requirements to fulfil the objectives. The theoretical underpinning for these questions is further examined in the next section.

Implementation

The embryonic stage of the guidelines for the implementation of reflection is probably an indication that, despite being talked about, reflection has been neither much researched nor much used in education. An advocate of student-centred methodologies, Gibbs (1981), identified the following three major components for the reflective stages of learning experiences: recollection, dealing with feelings and re-evaluation.

The first stage of reflection, the recollection or return to the experience, can be likened to playing a video recording of the activity. This first stage serves to clarify the learners' perceptions of the situation. As evidenced by Mezirow (1991, p. xiii) "...scores of studies...have found that it is not so much what happens to people but how they interpret and explain what happens to them that

determines their actions, their hopes, their contentment and emotional well-being, and their performance". The necessity to see events and circumstances 'as they really are' has also been emphasised by Glasser (1965, 1986).

Recollection, which assists learners to ponder and possibly question their decisions, actions and feelings, can be further enhanced through the use of paper and pencil by encouraging participants to focus on their thoughts (Boud et al., 1985). Recollections must be shared, compared and discussed so that learners can adjust their perceptions which might, at first, be blurred. The sharing stage of recollection is critical because it increases the chances of the learners getting closer to the truth.

The second stage of reflection attends to the feelings participants experienced during the activity. On the one hand, the positive feelings should be further explored; in particular, the specific behaviours which led to these feelings should be identified so that these behaviours can be replicated. On the other hand, as they can be temporarily disabling, negative feelings also need to be identified, understood and disposed of, before learning can take place (Boud et al., 1985). Here the sharing of feelings enables the participants to become aware of how their behaviour affects others. In addition, the sharing process has the potential to remove what otherwise might become affective blocks to learning.

The third stage of reflection, the re-evaluation of the experience, is based on the outcomes of the first two stages; it consists of linking the new ideas and feelings to the existing knowledge, before integrating these new ideas into the established system of knowledge. As a result, "...a 'coming together' or creative synthesis of various bits of information previously taken in, and the formation of a new 'solution' or change in the self...[takes place]" (Boud et al., 1985, p. 32). This new knowledge is then subjected to the process of validation before knowledge

can be appropriated by the learner. Once the re-evaluation is completed, new goals can be set for the next learning activity. Based on the three stages of recollection, exploration of feelings and re-evaluation, the impact of reflection in general and group processing in particular is further enhanced by the actions students may decide to take.

Action is a *sine qua non* condition for change, be it a behaviour or a thought pattern (Boud et al., 1985). For this reason, the purposes of group processing in co-operative learning, facilitating group interactions and maximising the group achievements, are directly linked to the students' desired actions. Practitioners indicate that, although students are usually able to identify group dynamic problems, they lack the procedure for dealing with the situation (Habeshaw, Habeshaw & Gibbs, 1984; Kagan, 1994). Group processing is one way to help students acquire the social and cognitive skills necessary to resolve such problems. Observations also reveal that new behaviour or thought patterns are difficult to develop (Boud et al., 1985). Moreover, although thought and intention are the first steps necessary to initiate change, they must be complemented by practice and a positive attitude. Consequently, the purpose of group processing, that is, the modification of these behaviours and thought patterns, should guide its implementation.

Group processing can be conducted in several non-exclusive ways. Individual evaluation forms can be completed by each student, identifying helpful and unhelpful behaviours as well as deciding which behaviours should be encouraged and which should be modified. Teachers can observe each group, comment on strengths and suggest improvements. Classroom observations have confirmed the author's conviction that students are more likely to take notice of comments and suggestions made by their peers. Thus, students' involvement in

the evaluation could be the most important component of the process.

Hamm and Adams (1992) drew our attention to the fact that more meaning will be attached to the experience if it is collective. One possibility is for students to take an active observer's role in the process. Student-observers can concentrate their attention on one group; alternatively, they can spend a few minutes observing each group before reporting to the group or the class. As structured evaluation generates more positive outcomes (Cohen, 1986), evaluation forms for observers to complete can be helpful (Kagan, (1994). To ensure that students concentrate on the processing, Cohen recommended keeping the group processing tasks simple, otherwise students might instead focus on the complexity of the task. Games can be used to familiarise students with group processing procedures and help them discover the relevance of group processing as well as develop their sensitivity to others' needs.

Followers of the natural structured approach to developing social skills recognise that time must be allowed for group processing. Consensus as to the frequency of this procedure has not yet been reached. At one end of the spectrum, Hubert and Eppler (1990) and Bellanca (1992) recommend weekly group maintenance sessions while, at the other end, Kagan (1994) planned a reflection time one third of the way through the lesson. At first, the latter approach may seem extreme. By pausing early in the lesson to evaluate behaviours and progress made, students are given the opportunity to rectify unhelpful behaviours without having to wait for the next lesson. The realisation that it minimises the time students spend behaving in an unhelpful manner and that it gives them extra time to practise a more helpful behaviour makes this effective approach rather attractive. In addition, the less time students practise undesired behaviours, the easier those behaviours are to modify. This time factor would be particularly

relevant when first introducing co-operative learning or when working with students with short attention spans. In other words, the timing of group processing may be situation dependent at the discernment of the teacher.

Another crucial element of group processing was recognised by Van der Kley (1991) who remarked that if students are to evaluate their success, success has to be defined, and the criteria for evaluating success formulated. In other words, goals have to be set at the beginning of the learning experience, allowing the group time to consider and meet their needs. Van der Kley suggested that regular group processing not only enables students to plan, practise and evaluate special skills, but also provides them with opportunities to resolve conflicts, experience satisfaction and maintain commitment to the group.

Conclusion

The literature review revealed that, apart from Glasser (1969, 1989, 1990) and Gossen (1993), who covertly suggested that these two areas could be brought together, needs theory and co-operative learning have so far been addressed separately in educational research. It was hoped that, by considering the possibility of a link between the satisfaction of students' needs and group processing, this study would add breadth and depth to the existing body of knowledge. More specifically, it was anticipated that, by exploring a potentially consequential factor of the productivity of co-operative groups, this study would increase the theoretical understanding of, and practical expertise with, reflective processes in a co-operative setting with regard to satisfying students' needs for self-worth and belonging.

In addition, this review has revealed that, although a large number of studies into co-operative learning focus on primary school children, research conducted at the secondary and tertiary levels has increased, that findings can

generally be extended from the primary to the secondary school and that co-operative learning is re-emerging as a valuable learning approach at the tertiary level (Johnson, Johnson & Smith, 1998). In sum, when group processing is structured and specific, and when time is set aside for it to happen, it enables students to acquire and maintain the social skills necessary for successful co-operative learning.

The present review examined the proposition that group processing, implemented in a co-operative learning environment, has a positive effect on students' psychological needs and, in turn, on their learning. In view of this review, it was hypothesised that students would perceive group processing as a valuable tool to satisfy their needs for self-worth and belonging.

The potential outcomes of co-operative learning in relation to students' psychological needs may have been overlooked and students may be missing out on an unique opportunity to learn responsibility, that is to develop the abilities to meet their psychological needs and lead a productive life. The aim of this investigation is to examine the proposition that group processing, a principle of co-operative learning, can influence the satisfaction of students' needs for self-worth and belonging in the short term. Research on the effectiveness of co-operative learning on students' psychological needs and on their learning in the short, medium and long terms is overdue. Such research is vital to maximise the student body's and the wider community's access to effective education. The effects of several similar studies into how and why co-operative learning benefits students may be compounded and eventually result in improved mental health and success not only for individuals or co-operative groups within education but also for society at large, that is, for local communities, be they politically, economically, sport, art or culture oriented. In other words, it was hoped that this

study, which aimed at formalising the provision and delivery of effective educational experiences, would contribute to understanding sustainable human development in a global knowledge economy.

Chapter 3

Research Methods

The aims of the investigation, of which this study is the second part, were to determine how and why group processing, a principle upon which co-operative learning is based, benefits students' learning. The satisfaction of students' psychological needs has been identified as a necessary condition for learning to take place. In addition, students' perceptions have been recognised as influencing their learning; hence, the purpose of this study was to identify students' perceptions of the extent to which group processing influences two of their basic psychological needs, those of self-worth and belonging. This chapter describes the methods towards these ends.

In order to address these issues, the chapter is divided into six broad sections. The first three sections present an overview of the research into co-operative learning, group processing and research development respectively. This overview is important because it helps to contextualise and describe the circumstances which led to the choice of the research methods employed in this investigation. The fourth section pertains to the design of the investigation, which comprises the preliminary and the main studies. The last two sections provide background information regarding the participants and the setting, and ethical considerations.

Research on Co-operative Learning

In their quest to define the characteristics of effective learning strategies, researchers have examined the impact on achievement of three levels of social interdependence: competitive, individualistic and co-operative. Studies which focused primarily on cognitive and non-cognitive outcomes included those by Johnson and Johnson (1989, 1990), Lew, Mesch, Johnson and Johnson (1986b),

Lucker et al. (1976), Sharan (1980, 1990), Sharan and Sharan (1989-1990, 1992) and Slavin (1995).

In an effort to settle the debate about which learning environment, individualistic, competitive or co-operative, offered the maximum gains for students from many social, economic and ethnic backgrounds, several reviews of studies were conducted. As most reviews focused on a limited number of studies, no definite conclusion could be reached. One review, however, that of Johnson et al. (1981), through meta-analysis procedures, reduced the results of most previous research to a single analysis. A cornerstone in the research on learning environments, this meta-analysis produced evidence indicating that co-operative learning promotes higher levels of achievement than competitive or individualistic learning.

The results of the Johnson et al. (1981) meta-analysis favoured co-operative learning environments in general, while single studies such as those encompassed in the meta-analysis highlighted different components of co-operative learning environments which were thought to contribute to the overall benefit of this learning and teaching methodology. For example, Miller and Hamblin (1963) emphasised the importance of positive interdependence, which is present when the group members' contributions complement each other. In a setting which promotes positive interdependence, individuals are encouraged to work with, and not against, each other. Positive interdependence was later to become the subject of the lengthy Johnson and Johnson - Slavin debate. This debate was not about whether interdependence was a key factor; it was about what type of interdependence was most important. While Johnson and Johnson (1998) posited that goal interdependence was a key element, Slavin (1983) believed that reward interdependence best explained the relationship between

co-operation and achievement. Goal interdependence exists when students believe that the goal of the group is to ensure the learning of all members. Reward interdependence exists when students are rewarded on the basis of the achievement of their group. In more recent studies Lew et al. (1986a, 1986b) and Mesch, Lew, Johnson and Johnson (1986) found that positive goal interdependence produced higher levels of achievement than individualistic learning; furthermore, the combination of goal and reward interdependence produced higher levels of achievement than positive goal interdependence alone. In sum, the way social interdependence is structured affects how individuals interact, which in turn determines the outcomes of the group activity (Johnson, Johnson & Smith, 1998).

Discussions such as the Johnson and Johnson - Slavin debate are important for two reasons. First, they encourage researchers to probe more deeply into an issue. Second, while the outcomes of single investigations contribute to the development of the body of knowledge, the benefit can potentially be maximised when the results of these studies are analysed and discussed together. This point is particularly relevant when, as in the Johnson - Slavin debate, the focus was also on the methods of selecting studies to include in the meta-analysis. The importance of single studies, when taken individually, may appear limited; under certain conditions, however, when these studies are considered together the effect is compounded; thus, their real position becomes clear.

Generally, studies have aimed at determining the variables which have the potential to facilitate high levels of achievement. In 1990, Robertson et al. reviewed about 80 studies in mathematics, comparing student achievement in co-operative learning versus traditional teaching methods. Their findings indicated

the positive effect of co-operative learning environments on students' achievements. Perhaps more importantly, the findings also evidenced that co-operative learning environments, which combined team reward and individual accountability, had consistently positive effects on student achievement. Individual accountability here means being responsible and doing one's fair share of the work.

Once the efficacy of co-operative learning was established, researchers focused on identifying its critical components. In 1995, after reviewing studies of at least four weeks' duration comparing co-operative learning and control classes, Slavin concluded that group goals and individual accountability had a significant effect on achievement. Robertson et al. (1990) also reported that student interaction, in the form of participants giving directions in mixed-ability groups, promoted higher levels of achievement than no student interaction. This finding was supported by other studies (Hendry, 1996; Hubert & Eppler, 1990; Johnson & Johnson, 1989; Slavin, 1995; Webb, 1985; Wells et al., 1990).

The majority of research studies on co-operative learning, be it in the context of learning environments or co-operation per se, have been conducted, for practical reasons, over short periods of time which ranged between a few days to a few weeks. Early research projects were conducted primarily in laboratory settings using large samples and focused on determining which learning environment was most conducive to students' high achievements. Researchers have expressed the need to conduct longer studies in classroom settings with small size groups. They have also voiced the necessity to undertake studies over a period of 4 or more weeks (Slavin, 1977) or even over one or more years (Stevens & Slavin, 1995), so as to determine the long term effects of co-operative learning. For practical reasons, it was inappropriate to conduct the present study

over a year or more; however, the setting, small sample size and length of this investigation, which spanned 13 weeks, addressed most of these concerns.

Whereas laboratory experiments conducted by researchers used to be the norm, projects conducted in the field by researchers and teacher-researchers have become widely recognised. The main reason for the change of attitude amongst researchers emanated from the realisation that the methods adopted in authentic settings are less intrusive than those applied by social scientists in laboratory settings. In the educational field, classroom-based research projects conducted by teacher-researchers, of which this study is a good example, have allowed for certain discoveries to be made and discussions between theorists and practitioners to take place. It is through these discoveries and discussions that the gap between theory and practice can be reduced and the influence of both theory and practice on the effectiveness of education can be maximised.

For example, classroom-based research on face-to-face student interaction discovered that social skills were the back-bone of successful interaction and that these skills were not necessarily natural to students; thus, social skills needed to be developed (Battistich et al., 1993; Lucker et al., 1976; Sharan & Sharan, 1992; Slavin, 1995). Additionally, Hubert and Eppler (1990) and others (Burron et al., 1993; Johnson & Johnson, 1994) established that both the acquisition and the maintenance of these social skills were more effective when students' actions were evaluated in what has been termed group processing.

As researchers expressed the need to undertake classroom based research, other areas such as those of business, industry or sport oriented similarly recognised the necessity to conduct projects in the field. It is interesting to note that research on a particular topic but conducted in different fields often leads to similar findings. A review by Hamm and Adams, in 1992, of classroom

based research projects found that group interaction not only encouraged the development of ideas and understandings but also improved social relations by correcting erroneous preconceptions of one's own behaviour and beliefs. More recently, research established that an environment which promotes verbal communication is conducive to building relationships. One specific study which was conducted during "The World's Toughest Yacht Race", the 1996 BT Global Challenge, emphasised that relationships built on face-to-face interaction were one of several keys to the success of a group activity (Walters, Mackie, Mackie & Bacon, 1997). The research project, which was carried out by a sailor-researcher in the field over a period of several months reflects the evolution of, and acceptance of, newer trends in research methods.

The results of the research conducted by theorists and practitioners have, so far, indicated that co-operative learning will be effective only when it is based on five principles. These principles are positive interdependence, individual accountability, face-to-face interaction, social skills and group processing (Johnson & Johnson, 1990, 1994, 1998). The importance of group processing has been foreshadowed by earlier theories on reflection; further research focusing on the variables influencing the outcomes of group processing is therefore necessary so that, together with theory, it can guide practice.

Research on Group Processing

Despite the abundance of research on co-operative learning, the number of studies which specifically focused on group processing, an element of co-operative learning, has been limited. Group processing refers to the act of reflecting on how a group of people work together and aims at maximising the benefits of the learning experience. Group processing strives to identify helpful and unhelpful behaviours as well as to decide which behaviours should be

encouraged and which should be modified so that the group goals can be achieved (Kagan, 1994).

Gage (1963) drew educators' attention to several writers, namely Dewey, Bayles and Hullfish and Smith, who, at the beginning of the 20th century, promoted reflection, upon which group processing is based, as a strategy fostering conceptualisation. Despite their solid theoretical work, few studies have attempted to test, clarify and refine their theory because, apart from Dewey and his followers, at first, reflection, like group processing, had not been recognised as a significant variable. In particular, the amount and the quality of both reflection and group processing are variables that have seldom been controlled.

Research on the impact of group processing on achievement used methods which compared co-operative learning conditions with and without group processing, and individualistic learning (Yager, Johnson & Johnson, 1985). The study indicated that the students who processed their actions performed better than those who did not examine their behaviours. A further study, carried out by Johnson and Johnson (1989), compared co-operative learning situations in which group processing was either not in place or conducted by the teacher, the teacher and the students, or the students alone. The results indicated that group processing undertaken by the teacher and the students together generated higher achievements than any other condition.

The studies of Hubert and Eppler (1990), which included an evaluation of different modes of feedback about the co-operative group processes, were further examples of comparative research methods. Conducted in Germany, the research examined 131 fifth graders. While all students were involved in co-operative learning groups, half of them received feedback about achievement only, whereas the other half also benefited from comments about the group processes.

Standardised tests, pre-tests and post-tests were administered to ascertain the effect on achievement while an instructional climate questionnaire and a rating scale for students were used to determine social classroom climate. Hubert and Eppler concluded that regular reflection about group processing was paramount in the development of interaction competencies. Moreover, they made explicit the need for research on factors influencing group processes and students' achievements, that is, on variables enhancing effective learning and teaching.

In 1993, Burron, James and Ambrosio, who also adopted comparative research methods, focused their attention on 51 students in a science course for pre-service teachers. They compared one class using a traditional learning method with one class using a co-operative learning approach which included some feedback directed at encouraging students to concentrate their efforts on specific social skills. Burron et al. used two different types of instruments to suit the purpose of their research. First, standardised tests and a laboratory examination revealed similar levels of achievement for both classes. Second, a questionnaire used to ascertain the students' perceptions of the effectiveness of co-operative learning techniques uncovered that 77% of the students felt comfortable with a co-operative learning approach and thought that such an approach was effective. Burron et al. concluded by stressing the importance of group processing as a means to foster the improvement of collaborative skills.

The focus and methods employed in the present study are, in some ways, similar to those of Burron et al. (1993). By drawing upon students' perceptions, the researchers were able to take their study further than the more traditional methods of standardised tests and laboratory examinations had done. Students' perceptions enabled the researchers to confirm the results obtained by the traditional methods as well as establish that students were also aware of the

benefits of co-operative learning. While the present study aimed at investigating the extent to which students perceive group processing as benefiting their senses of self-worth and belonging, Burron et al. established that group processing encourages the development of collaborative skills. The two studies are related because students' feelings of self-worth and belonging are, to a certain degree, linked to the ability to collaborate.

Overview of Research Development

While early research on co-operation focused on comparing co-operative, competitive and individualistic learning environments, recently the emphasis has been on defining the characteristics of a true co-operative learning setting. As a result, large studies on achievement which were conducted in laboratory and laboratory-like situations relying on standardised, pre-tests and post-tests have, in some cases, been succeeded by two different types of research. Researchers went into classrooms, using larger samples and comparative techniques. At the same time, smaller, more in-depth investigations into social behaviours were taking place.

As the professional judgement of teachers became more recognised, practitioners were encouraged to conduct classroom-based investigations to isolate the variables that positively influence the outcomes of co-operative learning. Furthermore, partly based on the view that education is a combination of social and individual life, contemporary educational research values students' perceptions and ideas. For this reason, questionnaires, audio-video taping of classroom life, and audio-taped focus interviews are prized tools for collecting data. The incorporation of these methods, which base their results on the participants' own perceptions of their situation, is a good example of the introduction and recognition of a particular 'type' of research. Labelled as

interpretive, this research paradigm is based on the belief that people's actions always reflect their interpretations and therefore can be understood only by accessing the meaning of these interpretations. In contrast, positivists claim that valid knowledge is based on experience (Carr & Kemmis, 1986), thus it excludes value judgements. While positivism values facts and numbers, and security and certainty, interpretivism values the participants' feelings and perceptions. Despite these differences, both approaches aim at describing social reality in a neutral manner. Interpretive models, however, encourage research conducted by practitioners; thus, they can help narrow the gap between research and practice.

While some researchers advocate one research paradigm, others value an approach which incorporates two or more paradigms (Miles & Huberman, 1984). The choice of research paradigm depends largely on the type of research being conducted. Most real world studies rely on both quantitative and qualitative data analysis and require a combined approach (Robson, 1996). In this study, one set of data complemented another set; numerical data from a scaled questionnaire were complemented by the participants' interpretations gathered in a focus group interview.

Research on the achievement effects of co-operative learning, much of which has been in the context of learning environments rather than co-operation on its own, is remarkable in its breadth and its quality. While it is clear that, under certain conditions, co-operative learning can have consistent and significant effects on the learning of students, some important challenges have yet to be addressed. For example, how and why these well-defined principles, such as group processing, have the ability to promote affective and cognitive outcomes are questions waiting to be answered (Hubert & Eppler, 1990; Johnson et al., 1989; Slavin, 1995).

Educational researchers have investigated theoretical ideas such as those of Dewey which suggests that people construct their own worlds and that meaning is constructed by the learner. In so doing, investigators have also gained a better understanding of what constitutes effective learning strategies and realised that what students do is more important than what teachers do (McMeniman, 1997). For example, student-centred activities, classroom interactions and students' responsibility for their own learning have been highlighted as central to effective learning. This belief is reflected in several documents, on-line services and publications produced by Education Queensland (1999b, 2000) namely, the Centre for Teaching Excellence, and Learning, Teaching and Technology both of which are readily accessible.

Personal development and behaviour modification treatments have been other areas of interest which have influenced the development of research on co-operative learning. Gibbs (1981) suggested that it is crucial to encourage students to become aware of how one is learning, what works and what does not work, and to help them judge their study methods for themselves. These new ideas imply that the means to access and experiment with metacognitive processes must be made available to students. Hence, the acceptance of, and interest in, reflection have increased and extended beyond educational settings to other fields ranging from leadership and management to nursing and sport.

Refined research methodologies, such as think-aloud protocols which give access to the thinking of successful students, have also contributed to better learning strategies because learners can be made aware of means to control their own thinking processes (McMeniman, 1997). In addition, Gibbs (1981) explains that:

Awareness and reflection are not merely symptoms of developments in

learners, they bring about the developments. It is through engaging students in reflecting upon the process and outcomes of their studying that progress is made. Passively following advice results in little such reflection, and so little improvement. (p. 91)

The positive effects of these strategies, which underlie group processing, have been noted by practitioners; however, students' perceptions together with these observations will provide a more complete picture of the situation. Perceptions have long been identified as impacting on people's life to a far greater extent than the actual life experiences one encounters. Indeed, Epictetus, in 100 AD, postulated that "What disturbs people's minds is not events but their judgement on events" (cited in Modlinski & Hansen, 1999, p. 8). More recently, the results of educational developments have stressed the role perceptions play in the emotional well-being of students; furthermore, the link between emotional well-being and achievement has been highlighted, thus reinforcing the importance of students' perceptions as a variable in the equation of effective learning and teaching. Students' perceptions of the benefits of group processing will take the research one step further than teachers' observations alone. By aiming to explore the students' perceptions regarding how and why group processing impacts on their senses of self-worth and belonging, this study is not only timely but it also keeps abreast with current research paradigms and developments. Additionally, this study has the potential to uncover one of the several, so far unidentified, variables influencing the outcome of co-operative learning and thus add to the existing body of educational knowledge.

Research Design

Prior to the present study being conducted, a preliminary study was undertaken for the purpose of determining how and why group processing benefits

students' effectiveness in a co-operative learning environment. The preliminary study also enabled the researcher to introduce co-operative learning as one of several valuable learning and teaching methods to her students. Setting the scene for and scaffolding the present study, the preliminary study also equipped the researcher to narrow the focus of, and to determine more precisely the direction and the depth of, the research questions. Table 1 summarises the design of the research, which includes both the preliminary and the main study, and is presented under the appropriate headings. More specifically, Table 1 reveals the time-frame, the methods of data collection, the skills targeted and the learning strategies which were applied throughout the study. Thus, it allows for an overall appraisal of the progressive transition from individual to group learning activities, the supportive environment and the reflective strategies such as goal setting and evaluating.

Preliminary Study

The preliminary study took place over a 12 week period and involved 8 mature age students enrolled in an Academic Literacy Skills class in a pre-university course at a regional Australian university. The preliminary study helped students to familiarise themselves with the principles, strategies and structures used in co-operative learning. In particular, the students developed a number of skills. First, they improved their social skills such as supportive behaviour and positive interaction. Second, they learnt organisational and reflecting skills such as goal setting and evaluating.

The learning activities used to cultivate these skills were those of Think-Pair-Share (TPS), Pairs-Compare (PC) and Group Investigation (GI). TPS activities, although not the only recognised strategy to implement co-operative learning methodologies, served the situation of this particular group, especially in

Table 1

Research Design of the Preliminary and Main Studies

Time allocation	Stages and method of data collection	Students' skills/competencies to be developed	Learning strategy
Preliminary study			
Weeks 1, 2	<u>Stage One</u> Weekly Guided Journal Entries	<ul style="list-style-type: none">■ Set, implement, evaluate and review goals● Develop supportive behaviours	Think-Pair-Share (TPS) on finding and writing topic sentences
Week 5	<u>Stage Two</u> Group Processing Open Questions	<ul style="list-style-type: none">■ Develop and practice group roles■ group processing skills● supportive behaviours	TPS and Pair-Compare (PC) on 'Ways of organising text: Classification'
Weeks 11, 12	<u>Stage Three</u> Group processing Question Sheet	<ul style="list-style-type: none">■ Plan and prepare a group presentation■ Evaluate and reflect■ Plan and manage group work● Supportive behaviours	Group Investigation (GI) on reading techniques
Main study			
Week 13	Scaled questionnaire Focus group interview		
Key to symbols	● interaction skills	■ organisational skills	

the introductory stages, because it started with individual work, to which students were accustomed, before introducing paired work and, later, work in a larger group. Once students were familiar and comfortable with the TPS structure, a more highly structured method, here defined as GI, was adopted. The composition of the groups was the result of students' own choices, complemented by some teacher's input, taking into account students' personalities and preferred learning styles; it was also influenced by students' irregular attendance and attrition.

The instruments used for the data collection, in the preliminary study, ranged from guided journal entries in weeks 1 and 2 of the study, simple open questions used for group processing in week 5 to a group processing question sheet, comprising fourteen items, in week 12. The guided journal entries focused on goals and supportive behaviours while the open questions used for group processing concentrated on the evaluation of the students' work as a group. The group processing question sheet comprised open questions which had greater breadth and depth than previous questions used for group processing; these questions also addressed the participants' individual performances and feelings during the activity.

For the purposes of categorising the data from the guided journal entries and the group processing question sheet, three categories of information were established: interaction skills, conceptual understanding and organisational skills. The researcher believes that interaction skills potentially provide intellectual stimulation and increase cognitive gains. Emanating from the Piagetian notion that interaction plays a vital role in the construction of knowledge (Hendry, 1996; Slavin, 1995), this philosophy is based on the premise that knowledge is constructed from within, through social action, in particular discussion, explanation and evaluation of thoughts and processes. Interaction skills, therefore, not only

contribute to affective outcomes, but also constitute the basis for conceptual understandings or cognitive knowledge. Interaction, however, does not necessarily happen, nor is it always helpful, even in a co-operative learning environment. It needs to be planned and the necessary skills involved in effective interaction need to be developed. For this reason, a third category of information called organisational skills, meaning the ability to plan and work effectively as a group, was also included as a link between interaction skills and conceptual understandings as shown in Appendix A. In this study, organisational skills refer to setting goals, choosing strategies and, in view of the outcomes, evaluating these strategies. These organisational skills are believed to facilitate the development of interaction skills because they provide a focus for students' behaviours.

The results were collated and tabulated using these categories and word coding to merge the responses. Coding is the process by which responses are classified into meaningful categories (Miles & Huberman, 1984). Categories should be mutually exclusive and exhaustive to the point that each response fits into one category only and every response belongs to one category. When a study is exploratory, as this one was, the most appropriate form of coding is inductive (Nachmias & Nachmias, 1996). Inductive coding is based on a coding scheme designed with the data collected in mind. The concept and the purpose of using codes is thus explained:

A code is an abbreviation or symbol applied to a segment of words - most often a sentence or paragraph of transcribed field notes - in order to classify the words. They usually derive from research questions, hypotheses, key concepts, or important themes. They are retrieval and organizing devices that allow the analyst to spot quickly, pull out, then cluster all the segments relating to the particular question, hypothesis,

concept, or theme. Clustering sets the stage for analysis. (Miles and Huberman, 1984, p. 56)

The categories of information shown in Appendix A were expanded to assemble a key-words list (see Appendix B) which served as the coding scheme for the three sources of data. As the students were familiar with the concepts on which both the categories of information and key-words list were based, their responses were easy to identify even when the key-word had not been used. The generation of key words, which preceded both the margin coding and the creation of inventory sheets, evolved from a review of the literature together with an examination of the data. This method was chosen to ensure the coding system would benefit from the wisdom of others, and be both relevant and practical in the analysis stage. Consistency of the coding act was addressed by coding the data twice with one day interval. This exercise revealed a high level of consistency. In addition, a memo was kept by the researcher. Miles and Huberman (1984) hold the view that:

[A memo is] the theorizing write-up of ideas about codes and their relationships as they strike the analyst whilst coding...it can be a sentence, a paragraph or a few pages...it exhausts the analyst's momentary ideation based on data with perhaps a little conceptual elaboration.... Always give priority to memoing. When an idea strikes, STOP whatever you are doing and write the memo. Get it down; don't worry about prose elegance or even grammar. Include your musings of all sorts, even the fuzzy and foggy ones. Give yourself the freedom to think. Don't self-censor. (p. 76)

Their advice was followed, adding depth and breadth to the data analysis. Based on the inventory sheets, which reduced a large number of data into a more practical format, the results were then compiled. Table 2, which provides an overview of the instruments and the methods of analysis of the investigation,

reveals the importance of the preliminary study insofar as it laid the foundations for, and scaffolded, the main study.

The purpose of the preliminary study was to investigate how and why group processing, the act of evaluating how well groups worked together, benefits students' learning. The results were consistent with several of the important points

Table 2

Overview of Instruments, Time Frame and Methods of Analysis of the Preliminary and Main Studies

Instrument / Means	Time frame	Methods of analysis
Preliminary study		
Journal entries	Entries made at the beginning and end of two lessons in weeks 3 and 4.	Margin coding based on key-words list (see Table 3) which was created after extensive literature review and data examination.
Open questions	Completed at the end of week 7.	Compilation of inventory of key words/phrases.
Question sheet	Completed during week 12.	Search for relationships and reflection.
Main study		
Scaled questionnaire	Completed at the beginning of week 13.	Individual and sum of numerical responses in three groupings.
Focus group interview	Carried out at the end of week 13.	Transcript. Margin notations. Summary. Search for relationships/explanations.

uncovered by the literature review relating to reflection (Boud et al., 1985) and group processing (Kagan, 1994). First, goal setting and evaluation are processes which not only promote the identification of areas needing improvement but also encourage students to persevere and stay focused. Second, the type, sequence and timing of the group processing questions promote a realistic and responsible appraisal of the situation. These questions, which also enhance supportive and goal-related behaviours appeared to help students become more effective learners.

The findings of the preliminary study provided support for the idea that the time allocated for the implementation of group processing was critical for two reasons. First, the content of the lesson, the task, should be a means to an end and not an end in itself (Boud et al. 1985; Mezirow, 1990). Hence, enough time should have been allocated for the planning and reflective stages; failure to do so, in this study, resulted in students having a tendency to focus primarily on the content of the lesson to the detriment of the processes. The findings of the preliminary study were thus in line with Mezirow's view (1991) that when teachers' and students' attentions centred on the content, the knowledge acquired was factual as opposed to knowledge emphasising the processes. Thus, this study was important because it suggested that teachers ought to choose subject matter as the vehicle to a destination rather than the destination itself, and the processes, such as group processing, as the journey towards that destination.

Second, goal setting should include the criteria upon which the achievement of each group can be evaluated by its members in a consistent manner. Students should discuss and define these criteria; as a result, students would increase their ability to evaluate consistently, quickly and confidently. The emphasis on processes and the introduction of criteria-based evaluation of the

group achievement, both of which have the capability for improving teaching practice, should be considered as subjects for future research projects.

The methods used for the preliminary study were appropriate. In hindsight, however, a number of issues would need to be addressed in future similar investigations such as the lack of provision for details in the written responses to the group processing questions. The focus group interview was selected as the means of data gathering for the main study as it would enable the researcher to clarify some of the students' answers and provide a lead to the questions that emerged from the data collected earlier.

To conclude, one of the most important findings of the preliminary study was in uncovering that the development of interaction and organisational skills appeared to precede the development of students' conceptual understandings. Should cognitive knowledge be dependent on interaction and organisational skills, teaching practices would need to be reviewed accordingly and the development of effective teaching practices would best be served by studies in which the aim is to explore ways to promote the development of interaction and organisational skills. Group processing has been highlighted as a process encouraging the development of these skills; for this reason, the perceptions of students regarding the impact of group processing on their senses of belonging and self-worth were targeted for the main study of the investigation.

Design of the Main Study

The purpose of the main study, which is the principal focus of this investigation, was to examine students' perceptions regarding the extent to which group processing, the act of discussing how well group members are achieving their goals and maintaining effective working relationships, satisfy two of their basic psychological needs. Thus, the two research questions were:

- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their senses of self-worth in a co-operative learning environment?
- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their senses of belonging in a co-operative learning environment?

The purpose of this investigation was to optimise understanding or build a theory rather than generalise or verify a theory. This approach is an alternative to the ways in which early research on co-operative learning and reflection has generally been conducted.

The research design was chosen because of its distinctive framework. As well as measuring, this investigation aimed at interpreting and getting closer to the truth which “in the fields of human affairs is better approximated by statements that are rich with the sense of human encounter” (Stake, 1978, p. 2). A situation based on human encounter is particularistic or unique in the sense that the variables are interdependent and inseparable. As a result, such a situation cannot be reproduced. This is true for this study because it involved a particular class, with a particular teacher using a particular approach, asking particular questions and giving a particular interpretation to the data collected.

Data from the students on their familiarisation and progress with interaction and organisational skills and reflection were collected during the preliminary study; the students’ guided journal entries and responses to the questionnaire were important sources of information because they gave direction to the construction of the instruments for the main study. Whereas the objective of the preliminary study was to understand the meaning of the experience, the aim of the main study was to examine students’ perceptions with regard to the degree to which reflection

impacts on their senses of self-worth and belonging. First, a scaled questionnaire provided numerical results; second, a focus group interview enabled participants to qualify their responses. The scaled questionnaire, a quantitative data gathering method, did not conflict with an otherwise qualitative approach; on the contrary, it played a complementary role because it simply and quickly identified issues worthy of further consideration.

The construction, focus and sequencing of research instruments requires special consideration. In this study, the focus group interview followed the scaled questionnaire; thus, it allowed for progression and depth of the research. This method was different from that of inter-method triangulation which uses three different instruments to collect the data and cross-check the validity of the information (Denzin & Lincoln, 1994). In this investigation, the data of one instrument provided a platform from which the construction of another instrument, and movement further up the scaffold, was possible. Both methods, however, pose similar dangers: information overload and confusion (Berg, 1995; Miles & Huberman, 1984). These were addressed by analysing and reducing the data as soon as they became accessible; this data reduction also facilitated the planning of the next step of the information gathering stage. Thus, data reduction contributed to maintaining a clear focus and ensuring depth. Another danger of the design adopted here was the logical flow from the data collected through one instrument to the next instrument. For this reason, a thorough examination of and comparison between, the different stages of data collection and analysis, took place throughout the duration of the preliminary and main stages of this research.

The search for patterns and exceptions was facilitated by analysing and coding the data, and collating the results which are presented in Chapter 4. This analysis assumed that teachers' observations and intuitions exposed in the

literature would be supported by the findings; thus, it was envisaged that this study would add to the body of knowledge of the teaching profession.

The relatively short length of this study, one week, was possible because solid co-operative learning foundations had been laid during the 12 week long preliminary study. In particular, students were familiar with the co-operative learning procedures including group processing and they were aware of the social skills required for such procedures. The results of the preliminary study were also helpful in constructing the items for the scaled questionnaire in the main study. The length of the co-operative learning sessions ranged between 20 minutes in the first week of the preliminary study and up to 60 minutes in subsequent weeks; it increased to two-and-a-half hours for the Group Investigation in Weeks 11 and 12.

The research involved 8 participants from a class cohort of 24 pre-university students undertaking a bridging course. One of the foci of this study, group processing, is a complex principle of co-operative learning, the implementation of which can easily be misinterpreted. For this reason, despite the small number of participants, no attempt was made to include students from similar courses at other campuses because this would have introduced other variables such as consistency in the implementation of co-operative learning including group processing, which were difficult to control, without necessarily benefiting the outcomes of the study.

In sum, the study was bounded by several factors. As well as students' irregular class attendance and attrition, which could have influenced the sample size, the participants' backgrounds and past learning experiences which were typical of mature age students undertaking a pre-university course affected the results of this study. The time-frame, the complexity of the learning and teaching

approach, the co-operative structures used, TPS and GI, and the data gathering methods which comprised a scaled questionnaire and a focus group interview also influenced the outcomes of the study. For this reason, a detailed presentation of the scaled questionnaire and the focus group interview follows.

The scaled questionnaire.

In the scaled questionnaire (see Appendix C), students' perceptions of their levels of self-worth and belonging were identified. Those connected to the first research question, which related primarily to the feeling of self-worth but also to that of acceptance, were the perceptions of self as a valuable group member and reflection as a process facilitating the development of valuable behaviours, including that of accepting others, and personal achievement. Those linked to the second research question, which related to the feelings of belonging and acceptance, were the perceptions of self as being accepted by, and accepting others, and reflection as a process facilitating the development of these perceptions and behaviours.

Students' perceptions regarding their feelings of self-worth and belonging were targeted because both Glasser (1965, 1969) and Maslow (1970) have suggested that these senses are instrumental in effective learning. Students were asked to identify what they perceived to be the contribution of group processing, one of the five principles upon which co-operative learning is grounded, towards their feelings of self-worth and belonging. They indicated their perceptions on a linear numeric scale where 1 represented the least gain and 10 represented the most gain.

Linear numeric scales offer several advantages: they are flexible, economical and easy to use (Alreck & Settle, 1995). First, the length of the statements or questions can vary. Second, only one set of instructions and one

type of response format are required. For these reasons and assuming that this is an easy cognitive task, once students understand the task and the response format, they can answer quickly. Third, numeric code type of answers are easier to manage than words and thus expedite the data analysis stage of the research.

The equal interval response scale, which was arranged in a single dimension, was labelled following Alreck and Settle's (1995) recommendations. First, the extremes were identified using numerals and bipolar opposite words so as to minimise scale interpretation error. Second, intermediate points were marked with numerals only so as to avoid confusion or misunderstanding.

The linear, numeric scale, which referred to numerals 1 to 10, was a logical choice for several reasons. First, the base ten number system or decimal system is familiar to students for it is now immersed in Australian society. Second, number lines serve to illustrate basic mathematical operations such as addition and subtraction and to represent solutions of equations and inequations graphically; for this reason, they are known to students. Third, the technique is efficient because each step from 1 to 10 can be rated. Fourth, the scale, which is a representation of a continuum, allows students to indicate their perceptions of their feelings of self-worth and belonging in an unambiguous manner.

The scaled questionnaire (see Appendix C) comprised nine questions distributed between the senses of self-worth and belonging in the ratio 5:4. The questions were assigned to two sections which related to the feelings of self-worth and belonging respectively. The decision to differentiate the questions according to the feeling at which they were directed was to help students separate the two feelings and, as much as possible, treat each feeling independently of each other. Had the questions been grouped together, some students might have been led to assume that if they felt that they did not belong to the group it was because they

were not valuable group members. The order in which these feelings were explored was also thought to be critical. The aim was to minimise the impact of one group of questions on the students' answers to the second group of questions. These precautions, however, did not preclude students from, perhaps, revisiting the first group of questions after answering the second.

Most questions were constructed following the same pattern "To what extent do you perceive/feel..." so that students could concentrate on answering rather than coming to terms with the meaning of the questions. The wording of the questions was also based on expressions with which the students were familiar; for this reason, the term reflection was used instead of group processing. The word and the concept of reflection were introduced in the early stages of the course to refer to the students' journal entries. For reasons of simplicity, this terminology was later applied to what this study defines as group processing. The expression 'group processing', when accidentally encountered, was explained in terms of reflecting or looking back at how well the group members had worked together and what the group had achieved. Thus, the choice of the word reflection instead of group processing, in the formal proceedings of this study, seemed a logical decision because it was based on the vocabulary which had been used in the natural setting of the classroom.

The expression 'valuable group member' appeared in two questions. The meaning of the word 'valuable' can be subjective; in this instance though, the expression had been used in class when discussing and appraising students' contributions to the group. For this reason, it was felt that students had a reference base on which they could draw and that the word 'valuable' was appropriate.

Two of the nine questions referred to how well students felt they accepted

or were accepted by the other group members. These questions, which were included in the section related to the sense of belonging, were considered important for two reasons. First, the feelings of being accepted are directly related to the feelings of self-worth and of belonging because when one feels accepted one's senses of self-worth and belonging increase. Second, acceptance had been such a concern during the preliminary study that a number of students had tried to address this issue by focusing their goals on developing more accepting behaviours and gaining greater acceptance. As a result, the journal entries had been carefully guided so as to foster acceptance. The teacher-researcher had observed distinct improvement in the levels of acceptance displayed by students; however, what triggered these changes remained to be established. The students' perceptions on the matter were viewed as valuable information to support or refute the practitioner's intuitions that group processing had contributed to the students' increased levels of acceptance.

The scaled questionnaire enabled the researcher to present the information collected in tables. The benefits of displaying results in tables include clarity, brevity and an explicit visual representation. Furthermore, tables offer readers a readily accessible and convenient visual representation. The advantages of visual displays could, in turn, lead to greater acceptance of the study by teachers and students alike which, in educational research, is a consideration one cannot ignore.

The data from the scaled questionnaire were first collated into one table showing the responses of the students as a group. Analysis of the results uncovered elements which, at first, had not been contemplated. For example, while the responses of some students spread across the scale, others clustered around the same numerals. For this reason, the individual responses were

displayed on a separate table to facilitate further analysis. A summary of these individual responses was also compiled in an effort to create a profile of each student's perceptions as well as generate and clarify the trend of the participants' perceptions.

The focus group interview.

The second means of collecting data was a focus group interview involving 5 student-volunteers from the 8 students who had accepted the invitation to take part in the investigation and who had completed the scaled questionnaire. This type of interview was chosen because it enabled the researcher to centre on specific issues and to probe more deeply into some of the participants' responses to the scaled questionnaire. This mode of gathering information was also selected for its potential to enable students to express what was most important to them and to provide comments far beyond just responding to questions. Furthermore, the sharing of personal experiences stimulates others to do the same, adding quantity and quality to the information gathered (Alreck & Settle, 1995).

Described by some as an art and by others as a technique, group interviewing is a dynamic process to gather information through interactive strategies such as conversations. Stenhouse (1984) differentiated between information as data and information as evidence. Whereas data gathering serves to produce numerical results from which generalisations can be deducted, evidence is used to interpret and verify the reliability of information as well as generate reflection and discussion. In this study, the interview was a means of collecting both further data to that gathered through the scaled questionnaire and evidence. For this reason, a semi-structured type of interview was selected, an interview which would allow for different categories of questions.

Interview questions can be divided into four categories: essential, extra,

throw away and probing questions (Berg, 1995). In this investigation, the essential question aimed at accessing the desired information whilst the extra question served the purpose of checking the reliability of the answers to the essential question. The throw-away questions were meant either to develop a rapport between interviewer and participants or suggest a change of pace or focus. Probing questions were used when the participants' responses required further explanation.

The essential questions of the focus group interview were based on the scaled questionnaire findings which indicated that, in most cases, group processing had had a positive effect on the students' senses of self-worth and belonging. Aimed at clarifying students' perceptions of *how* and *why* group processing impacted on their feelings of self-worth and belonging, these questions had been prepared in advance for two main reasons. First, preparation ensured that the desired information would be collected during the interview. Second, thorough planning counterbalanced the researcher's limited experience with interviews. It was felt that having the questions written down would reduce the interviewer's stress and help her focus on creating a relaxed, open and accepting atmosphere; that is, a climate conducive to sharing inner thoughts and feelings.

Despite the questions being set in advance, the interview was conducted in a way that was flexible so as to allow participants to express themselves freely and to digress when appropriate. For example, the sharing of experiences not directly related to the topic of discussion was accepted on two grounds. First, it gave students an opportunity to disclose events and feelings they perceived as consequential in their lives. Listening to their stories was one way to value their contributions. Second, these accounts supplied the researcher with additional clues, with subtle details and nuances, with potentially meaningful information and

with supplementary evidence. Provision for flexibility also enabled students to air issues which they perceived as critical but which had not been addressed by the scaled questionnaire or by the interview questions.

The focus group interview was audio-taped, then transcribed to ensure accuracy and completeness of the record. Audio-tape recording is a well liked procedure because it does not require complex technical skills (Stenhouse, 1984). Recording the interview freed the researcher from taking extensive notes and provided a means to keep records of the exact verbal conversation. The information contained in the interview transcript was margin-coded and classified before being rank-listed and tabulated. The ensuing table served to compile the results which are presented in Chapter 4, and discussed in Chapter 5.

While this method reduces large numbers of data into more manageable shape, it has the disadvantage of losing some of the detailed information provided by focus group interviews. To counterbalance this weakness, one may choose to quote the participants' contributions that best illustrate the ideas summarised and rank-listed in the table. Hence, a number of direct quotations have been included in Chapters 4 and 5. In addition, the use of direct quotations could also help to clarify the researcher's interpretations for the reader.

Participants and Setting

The target group was an Academic Literacy Skills class cohort of students undertaking a 'Studies for Tertiary Education Preparatory Skills' (STEPS) course at a regional Australian university. The course aimed at bridging the gap between the students' incoming skills and the academic skills required for tertiary study. These students were chosen because they were taught by the researcher and she had a commitment to improving the learning and teaching taking place in her classes. Not only was the access to the participants convenient but also a trusting

and friendly relationship between students and teacher had already been established. Furthermore, this was possibly the first study into co-operative learning to involve STEPS students.

The number of participants involved in all three stages of data gathering and consenting to be part of this investigation was influenced by several factors. First, attendance fluctuated and retention dropped in the course in which these students were enrolled. Second, the timing of the information session about this study, together with the consent request, coincided with a period of high stress level from an assignment and a test in another subject. Thus, the students' first priorities were their study and family commitments. Consequently, the students who participated in this study had a high attendance score and were motivated to be involved. All 20 or so students attending classes answered the scaled questionnaire at the end of the lesson. Only 8 students, however, volunteered to make their responses available for this study and to participate in the group interview. As the interview was to be conducted outside class hours, a time suitable to all involved could not be arranged. Consequently, 3 volunteers did not take part in the interview.

The 5 students who participated in the focus group interview did so on a voluntary basis. Students 1, 6 and 7 had worked in the same group throughout the duration of the study while Students 2 and 4 had worked together for a few weeks only, after several students had withdrawn from the course and groups had been re-arranged. All students were keen to be involved in the study; however, on several occasions, Student 6 had indicated a certain degree of reluctance for group work. The students who participated in this interview had a high attendance score, displayed coping skills and were motivated to be involved; hence, they may represent only a portion of any class rather than provide a typical cross section.

A seating arrangement in the shape of a circle was chosen for the interview to create a friendly environment based on equality and openness. It placed interviewer and interviewees on the same level and enabled participants to see and hear each other easily. For practical reasons, the interview, which was held outside class hours, took place in the usual classroom. As a result, the environment in which the interview was carried out was familiar to the students. The obtrusive presence of the recording devices, however, induced feelings of self-consciousness, particularly at the beginning of the interview.

Ethics

Research is an activity which necessitates explicit standards of behaviour also defined as ethics. The choice of an ethical framework depended on the setting and the target group: in this case students undertaking a STEPS course. Ethical issues such as the information contained in the participants' responses, consent, right to withdraw at any time and confidentiality, as well as the purpose of the investigation, were identified and addressed.

Several mechanisms were used to obtain informed consent. An information session was conducted during a lesson, consisting of how the researcher's interest developed, and the purpose and benefits of the research. The proposed schedule of activities was explained and students' queries were answered. These facts were collated, together with a summary of the activities and the students' rights to anonymity and to withdraw, on an information sheet (Appendix D) which was distributed to the class. Students willing to participate in the study, by making their responses available and themselves ready to partake in the focus group interview, received a consent form to sign (Appendix E). As well as being assured in writing and verbally of their right to withdraw their consent for data they generated to be included in the study and to participate in the focus group

interview, students were also assured that there would be no penalty, academic or otherwise, should they decide to withdraw. Furthermore, the research supervisor's name and telephone number were made available to students should they have any concerns about the nature and/or conduct of this research project.

Participants' rights to anonymity were addressed using alphanumeric codes instead of names on all documents. The only divisions were in relation to gender and age. Steps were taken, however, to ensure that gender and age were revealed only when necessary and in such a way that participants' anonymity was preserved. The list of names and their attributed codes, and the data, have been secured in a locked filing cabinet where they will remain for a period of five years. The participants' name will not be disclosed to anyone.

This chapter centred on the research methods adopted in the investigation. First, it presented a historical framework which focused on co-operation in the context of research on learning environments and on co-operative learning per se. It also emphasised the different research methods used by researchers and contrasted recent research approaches with methods more traditionally employed. Second, it presented the design of the investigation and justified the choice of design which had been influenced by the historical perspective of research methods. Third, this chapter provided information pertaining to ethical issues generated by research such as this investigation. The results of this study will be presented and discussed in the next chapter.

Chapter 4

Results

This chapter presents the results of the main study, the second part in a 13 week long, two-part investigation. The main study was based on the data from the scaled questionnaire and the focus-group interview conducted during the final week of the investigation. The data from the scaled questionnaire and the interview are detailed and discussed successively, with each set of data being further divided according to the research question to which it relates. This is followed by a discussion of the results for both senses of self-worth and belonging and a conclusion.

The investigation explored two research questions, which were:

- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their sense of self-worth in a co-operative learning environment?
- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their sense of belonging in a co-operative learning environment?

The focus of the research was the students' perceptions of reflection with regard to the satisfaction of two of their basic psychological needs, those of belonging and self-worth. The setting for the learning tasks was an environment which reflected the five co-operative learning principles that Johnson and Johnson (1990, 1994, 1998) considered to be positive interdependence, individual accountability, face-to-face interaction, social skills and group processing. The focus of this study was on examining the group processing principle, more commonly known as reflection, for its influence on the students' senses of self-worth and belonging. The number of students attending class varied between

15 and 24. All students engaged in activities based on the co-operative learning structures of Think-Pair-Share (TPS) and Group Investigation (GI), both of which have been described in Chapter 3. While all students present at the time responded to the scaled questionnaire, 8 students agreed to take part in the interview but only 5 were available to participate in the focus group interview.

The two research questions guided the collection of the data about the students' perceptions of their senses of self-worth and belonging as well as their perceptions of the impact of group processing on these feelings. Another category of information, which regarded students' levels of acceptance towards one another and which related to both senses of self-worth and belonging, was also gathered because, early in the investigation, students had indicated that their need for acceptance was important. Questions about the sense of acceptance were incorporated into both the self-worth and belonging sections for reasons which will be explained in the next section. The information collected through the scaled questionnaire was sorted to show both the individual responses and the sum of responses whereas the data gathered through the focus group interview was transcribed, coded, collated, sorted and summarised. An overview of the instruments and means, the time frame and the methods of analysis is displayed in Table 2. This overview shows that during the first phase of the investigation, the preliminary study, the data about the implementation of reflection was collected using journal entries, open questions and a question sheet. During the second phase of the investigation, which is the focus of this study, information was gathered using a scaled questionnaire and a focus group interview. While the results of the preliminary study indicated that group processing facilitated the development of interaction and organisational skills as well as conceptual understandings, it was foreshadowed that the data gathered in this study would

extend the findings of the preliminary study. In particular, it was anticipated that the scaled questionnaire and the interview would help explain how and why group processing influences students' actions and achievements.

Scaled Questionnaire

Two main criteria were considered when constructing the scaled questionnaire: the aim was to gain information related to the participants' senses of self-worth and belonging and also enable students to reflect at a level deeper than they had experienced previously. The items on the scaled questionnaire were divided into two sections, those relating to feelings of self-worth and those associated with feelings of belonging. The questions allocated to each section as well as students' responses on a 10-point scale are displayed in Appendix C. Questions 3, 6 and 7 are all connected to the students' perceived levels of acceptance, displayed or felt by them. Question 3, that of the effect of group processing on the development of their acceptance ability, was attributed to the 'self-worth' section because the ability to accept others had been a goal for several weeks and it was anticipated that students would feel more valuable if they had achieved their goal; Questions 6 and 7, on how well the students accepted and felt accepted by others, were incorporated into the 'belonging' section. In each case, it was believed that, although the questions explored both feelings of self-worth and belonging, they did so to varying degrees. Each question, therefore, was allocated to the section it was perceived to contribute most. The questions pertaining to the development of one's level of acceptance, for example, were included in the self-worth section because, initially, students' awareness of their becoming more accepted impacted on their senses of self-worth earlier and more often than it did on their senses of belonging. It was anticipated that once the students' abilities to accept others had been further

developed, however, the learning environment would be more supportive and impact on students' senses of belonging.

The items on the scaled questionnaire were developed specifically for this study. The response format was a 10-point linear numeric scale. As explained in Chapter 3, this particular response format was chosen for two reasons. First, students were familiar with the base 10 number system. Second, the scale allowed students to express their feelings in an unambiguous manner.

Sum of Numerical Responses

The sum of the numerical responses for each question was collated in Table 3 and analysed. Given the small number of participants, the results have been presented as ratios rather than percentages because it was felt that ratios would paint a fairer picture of the situation. The results have been featured according to the two research questions which focused on the senses of self-worth and belonging.

Sense of self-worth.

Items 1-5 of the scaled questionnaire related to the first research question which was: To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their senses of self-worth in a co-operative learning environment?

The first item of the scaled questionnaire required students to evaluate their worth as group members. The main reason for examining self-worth was to examine the association between self-image and self-confidence during reflection in a co-operative learning environment. The criteria according to which they were to rate themselves had been considered in class throughout the 13 weeks of the entire study and had been expressed in terms of the students' abilities to support each other in their learning. The specific valuable behaviours comprised

Table 3

Sum of Numerical Responses - Scaled Questionnaire (8 students)

Self-worth questions	Responses & Number of occurrences									
	1	2	3	4	5	6	7	8	9	10
1. To what extent do you perceive yourself as a valuable group member?	1			1	1		2		1	2
2. To what extent do you feel the reflections have helped you become a more valuable group member?	1	1		1		1	1		2	1
3. To what extent do you feel the reflections have helped you become more/less accepting (more/less tolerant) of others?	1					2		2	1	2
4. To what extent do you feel the reflections have contributed to your personal achievements?	1					1	1	3	1	1
5. To what extent do you feel the reflections have contributed to the group achievements?	1		2			1	1		3	
6. To what extent do you feel that you are part of the group?		1		1			3		2	1
7. How well do you feel accepted by the group members?				1			2	3		2
8. How well do you accept the other group members?			1				2	2	1	2
9. To what extent do you perceive the reflections as influencing your sense of belonging to the group?	1		1	1		2	1	1		1

interaction competencies and organisation skills; they included listening, sharing and discussing ideas, helping, encouraging, giving positive feedback and expressing appreciation (Kagan, 1994). Other constructive actions consisted of staying focused, following group roles guidelines, setting goals and evaluating individual and group performances. The students' abilities to be more accepting of one another had also been discussed reflectively in the weeks prior to the administration of the questionnaire. These discussions centred on how to increase the group members' levels of acceptance. As a result, students' abilities to support and accept others constituted the main criteria upon which students rated their worth as group members.

The nature of the question, 'To what extent do you perceive yourself as a valuable group member?', needed to be considered when examining the participants' responses because personalities might have influenced these self-assessments of one's worth. Shyness and self-esteem, for example, might prevent some people from choosing a high rating for their own worth. On the other hand, over-confidence and a desire to impress might promote inflated ratings.

After looking at the results across the 10-point scale, it was felt that the discrimination in the way the patterns were distributed would not be lost if the responses of Columns 7, 8, 9 and 10 were combined. In the case of Question 1, 5 of the 8 students strongly felt that they were valuable group members. At the other end of the scale, when Columns 1, 2, 3 and 4 are combined, 1 of the 8 respondents perceived his/her worth to the group to be quasi nonexistent. The remaining respondent (Column 5) gave an uncommitted score.

Considering now the marked improvement in the participants' interaction skills, which was observed by the researcher throughout the 13 weeks, these low ratings point towards several possible explanations. First, the students'

personalities or the influence of the tall poppy syndrome might have contributed to some under-rating of their value as group members. Second, the students' evaluation might have taken into consideration the desired overall improvements rather than the short term progress. This could be read as a sign of students' misconception of realistic goals and of the time it takes to reach one's goals. It must be remembered, though, that these evaluations are based on the students' perceptions of their worth which may well differ from the actual value to the group. It is how people perceive events, not the events, that cause negative or positive feelings. For this reason, the focus of this study is not the accuracy of the students' perceptions: it is the students' feelings because people make decisions and act on those perceptions or beliefs disregarding their accuracy (Bandura, 1986, 1995).

The second item on the scaled questionnaire asked participants to rate reflection as a means of becoming more valuable group members according to the criteria discussed in class. Reflection had involved thinking back about what the goals were, what had actually happened, what had been achieved and what goals needed to be set for the next lesson. When the total responses to a combined Columns 7, 8, 9 and 10 are considered, 4 of the 8 students perceived reflection as contributing to their development of valuable behaviours displayed by the individuals. When the total responses to a combined Columns 1, 2, 3 and 4 are examined, 3 of the 8 students felt that reflection had little impact on such behaviours. Given the polarised nature of these responses, one might question whether some students were not ready for co-operative learning or reflection in particular and whether some students tried to please the teacher or somehow missed the point.

The third item on the scaled questionnaire required students to rate

reflection as a tool to increase group members' levels of acceptance. All answers but one were situated in the upper half of the scale (see Table 3), thus indicating that most participants felt that reflection encouraged the development of acceptance of others. These results are not surprising as lack of acceptance had been raised by the participants as an issue when they started working in groups; becoming more accepting had been a major objective throughout the 13 weeks of the study.

The fourth item on the scaled questionnaire expected students to evaluate reflection as a strategy to enhance personal achievements. In this context, and based on previous class discussions, personal achievement referred to the individuals' goals regarding the development of interaction competencies and organisational skills, including group roles as well as some of the objectives of the learning activity. As with the responses to Question 3, all but one answer ranked in the upper half of the scale (see Table 3). When the total responses to Columns 7, 8, 9 and 10 are considered together, 5 of the 8 participants believed that reflection had had considerable effect on their individual achievements. One student believed that reflection had had little effect (Column 1), and the remaining participant was not very committed either way (Column 6).

The fifth item on the questionnaire required students to rate the impact of reflection on the group's achievement. Group performance here related to the group's objectives set at the beginning of the activity; these objectives included planning and executing the group task, developing social skills such as listening and participating as well as setting goals, allocating group roles and deciding on a strategy to complete the task successfully. When combining Columns 7, 8, 9 and 10, 4 of the 8 responses ranked high; when combining Columns 1, 2, 3 and 4, 3 of the 8 responses were low. Column 6 contained the remaining student, not feeling

strongly either way (see Table 3).

Overall, participants displayed healthy senses of self-worth. A majority of students perceived reflection as beneficial to some degree, mainly in respect to their personal achievements, less so with regard to the group achievements. Given the length of the entire study, 13 weekly lessons, these results are not surprising as individual improvements are reflected in the group achievements. For this reason, it could be expected that given more time, or a more intensive exposure to co-operative learning, the students' perceptions of the influence of reflection on the group achievement might be more positive.

Sense of belonging.

Items 6-9 of the scaled questionnaire related to the second research question which was: To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their sense of belonging in a co-operative learning environment?

The sixth item on the scaled questionnaire required students to rate their sense of belonging to their group. The criteria according to which participants were to evaluate their sense of belonging were based on whether students felt part of the group, connected to, and comfortable with the other members of the group. When combining Columns 7, 8, 9 and 10, the responses indicate that 6 of the 8 participants felt they belonged to the group; when combining Columns 1, 2, 3 and 4, the responses show that 2 of the 8 students felt they did not belong to the group much (see Table 3).

The seventh and eighth items on the questionnaire required respondents to grade their feelings of being accepted and accepting of others respectively. Acceptance had been defined in terms of respect for others' ideas and readiness to try listening and understanding differences without judging. In both cases, 7 of

the 8 students perceived levels of acceptance at both the giving and the receiving end to be high, while 1 of the 8 students perceived these levels of acceptance to be low. It is worth noting the similar focus of these questions and Question 1, in which acceptance was the main criterion to evaluate students' value as group members. The answers to these questions differ only slightly, thus strengthening their validity.

The ninth item on the questionnaire asked participants to rate the effect of reflection on their feelings of belonging to the group. The data revealed that the numbers of high and low scores were identical: 3 in each case. The remaining 2 of the 8 responses were in the middle of the scale. In other words, as a group, the respondents were uncommitted towards the impact of reflection on their senses of belonging. Overall, the responses to the questions relating to the feelings of belonging suggested that, although students strongly felt that they were part of the group, less than half perceived reflection as having a major influence on their senses of belonging. Given this spread of responses on such a small sample, other variables may have been operating such as the Australian culture which appears to value tacitly group membership and personal effort for the benefit of the group more than it does individuality and personal effort for the benefit of the individual. Thus, the sense of belonging may have been taken for granted and perceived as being out of the control of the individual members.

It was appraised that the sum of the responses offered limited and, at times, ambivalent information. The data indicated that, as a group, the participants perceived reflection as benefiting their personal successes more than it did their worth as group members. This important trend prompted further questions. For example, whether the responses of individual students ranked consistently high or low was seen as worthy of investigation as invariable ratings might indicate

pre-conceived ideas and therefore a restricted evaluative process. Patterns in the individual responses could help detect invalid data, as the students' responses may have been influenced by the question wording. Also, under some circumstances, responses are linked; for example, a negative response to Question 1 would automatically result in a negative answer to Question 2 because if one does not feel a valuable group member, then reflection is unlikely to have helped improve this feeling. It must be noted, however, that a positive response to Question 1 would not automatically incur a positive response to Question 2 for some students may have felt valuable group members before the implementation of reflection. Another point regarded as deserving attention was that of possible links between the students' individual answers. The responses relating to different issues, when examined separately, might not foster understanding; however, when analysed together, the same responses might provide one or several links to further comprehension. For these reasons, the researcher decided to analyse the individual responses, the outcomes of which are presented below.

Individual Responses

Examination of the individual responses, which are displayed in Table 4, was conducted using colour-coded data displayed in 10-point scales which gave access to the individuals' ranges of ratings. It was found that, in half of the cases, the students' ratings ranged over only three out of the ten possible points of the scale. Furthermore, these ratings were relatively high (7 - 10). On the other hand, 2 of the 8 individual responses ranged over nine points, while the remaining 2 responses ranged over four and six points.

Closer inspection of the responses revealed that Student 3 rated each item with a 9 and Student 6 gave a rating of 1 on each item irrespective of the question asked in the section related to self-worth. Even though the items within each

Table 4

Individual Results - Scaled Questionnaire

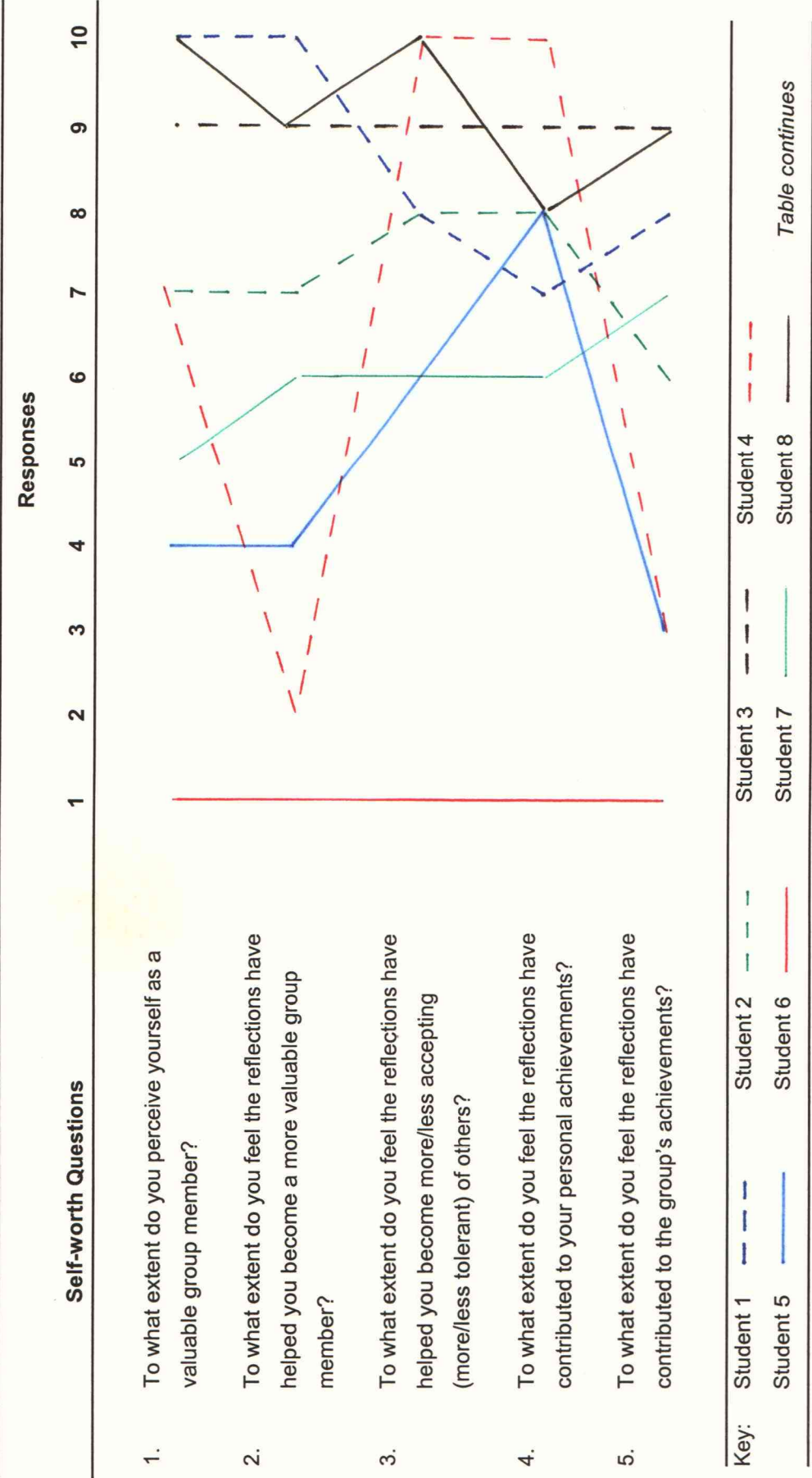
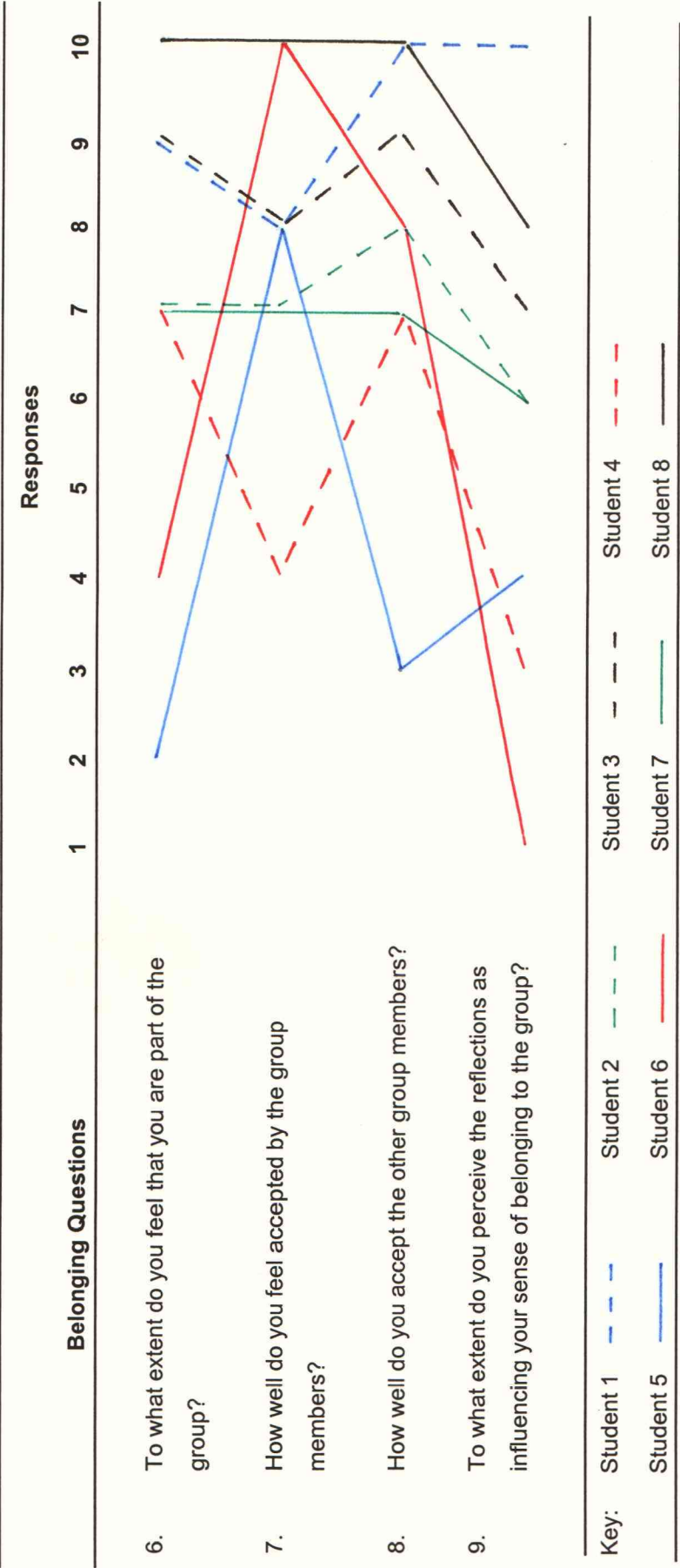


Table 4 cont.

Individual Results - Scaled Questionnaire



section of the questionnaire were constructed with the intention of being part of the same variable, that is, self-worth or belonging, one might reasonably expect some variation in ratings on the different items for each respondent. When the same rating has been attributed to different responses, one could challenge the validity of the data. Student 3, however, had often shared positive thoughts and comments about co-operative learning and reflection during classes; furthermore, this participant had, throughout the 13 weeks, demonstrated an open and sincere approach to communicating with teachers and students alike. Student 3's keen interest in educational matters and her desire to help the teacher-researcher were, nevertheless, considered but deemed insufficient evidence of unreliable data. For this reason, it was considered that there was no reason to doubt the validity of Student 3's consistently high ratings.

In contrast, Student 6's answer to the third item of the questionnaire was qualified with "Cannot remember what I say in the reflection or the questions within; as such, the reflections did not mean much to me". At first, this comment appeared to be provocative. On the other hand, it did not seem to fit with this participant's ability and willingness to engage in thinking. Could reflection benefit students without them realising the positive effects of the process? In this particular case, however, Student 6's deep thoughts had always been subject- or content-related as opposed to person- or emotion-oriented. It was envisaged that this unexpected answer reflected a protective mechanism against potentially hurtful self-discoveries thus raising the issue of students not being ready to work co-operatively and reflect on their behaviours and feelings.

Since the introduction of co-operative learning, Student 6 had been very explicit about a strong preference for individual work. Given this student's atypical situation and past experiences, it was considered that the avoidance of contact

with others might have been related to a fear of further rejection. For this reason, the teacher-researcher strongly encouraged Student 6 to participate in group activities. This is not to say that co-operation was forced on participants; on the contrary, the option of working individually, although not promoted, was always offered. The other group members not only supported but also valued Student 6's contributions. Despite these efforts to enhance Student 6's sense of self-worth throughout the study, the score he attributed to the feeling of self-worth as a group member was the lowest possible. Student 6's responses to the questions of the second section, that focused on the sense of belonging, however, covered a greater range of scores and were more positive.

The items to which Student 6 awarded high scores were those related to levels of acceptance. In view of the teacher's observations, there is little doubt that the way the issue of acceptance was dealt with benefited Student 6 in several ways. The problems and feelings associated with lack of acceptance were openly discussed rather than ignored. This was an opportunity for Student 6 and the others to realise that they were not alone in dealing with low levels of acceptance. Instead of feeling victimised and powerless, participants became aware of their own lack of acceptance of others. In addition, they had an opportunity to try to change the situation by becoming more accepting. The researcher believes that the co-operative environment and the reflections impacted positively on Student 6's self-image. At the beginning of the study, this participant believed that the other group members neither accepted nor valued his participation; a score of 10 out of 10 on Question 7 indicates that, by the end of the study, Student 6 felt well accepted.

Student 6's perceptions that reflection had no influence on his feelings of acceptance provide two important reminders. First, it is possible that factors other

than those under scrutiny have influenced the outcomes of the learning activity and of the study. Second, students' perceptions must be taken into account by teachers, especially when their observations do not agree with the perceptions of students, because these perceptions can potentially lead to the discovery of variables which have not been uncovered.

Considering now Questions 7 and 8, all but two students rated their perceived level of acceptance equal to or higher than the degree of acceptance they felt had been displayed towards them. These responses could be considered consistent with the analysis of the data from the fourth and fifth items on the questionnaire which indicated that students felt reflection impacted on personal achievements more than it did on group achievements. Students might have been more aware of their efforts and improvements than of those of the other group members. If so, could this be an indication that, although students felt part of the group and displayed co-operative behaviours, they thought and felt like individuals rather than co-operative participants, possibly because they had been conditioned by a lifetime of competitive and individualistic learning experiences. Alternatively, these students were perhaps looking at others, rather than at themselves, for things that could be improved. Participants may, however, have adopted a balanced approach, that is, students may have felt individually accountable.

Comparison of question results.

The individual responses, which are displayed on a 10-point scale on Table 4, were also analysed by comparing the results, two relating questions at a time. For example, the responses to Questions 1 and 2 were weighed against each other because they both dealt with self-worth; while the focus of Question 1 was the sense of self-worth, the focus of Question 2 was the perceived effect of reflection on this feeling. The responses to Questions 4 and 5 were examined

together because both questions dealt with achievements. In one case, it was individual achievement; in the other, it was group achievement. This comparison provided valuable information about the individuals' perceptions relating to the influence of reflection on their achievements. The comparison of Questions 2 and 7, and of Questions 6 and 7, was a result of the importance students placed on their senses of acceptance as well as the author's anticipation that the feelings of acceptance were linked to those of self-worth and belonging. The results of this exercise, which was part of a search for patterns and trends, are shown in Tables 5 - 8.

When comparing the results of Questions 1 and 2 (see Table 5), there seems to be a parallel between the sense of self-worth and the ratings given to Table 5

Comparison of Questions 1 and 2

Focus: feels a valuable group member (Q. 1) and reflections have contributed to this feeling of self-worth (Q. 2)		
Student No.	Scores (Q. 1: Q. 2)	Summary
1	10 : 10	Individual ratings are either identical or vary by one point only. Reflections helped to the extent to which students felt valuable group members.
2	7 : 7	
3	9 : 9	
4	7 : 2	
5	4 : 4	
6	1 : 1	Exception: Student 4
7	5 : 6	
8	10 : 9	
Means	6.6 : 6.0	

the impact of reflection on this sense. In all but one case, the higher the feelings of being a valuable group member the higher the perceived influence of reflection on these feelings, and the lower the feelings of being a valuable group member the lower the perceived impact of reflection on these feelings. It could be argued that if one does not experience strong feelings of self-worth, then reflection has not had a positive impact on these feelings. Reflection could, however, have had a negative effect on these feelings or no perceived impact. Participants' responses seemed to indicate that students did not perceive reflection as having a negative impact on their feelings of self-worth. Nevertheless, one cannot ignore the possibility that students might have read and answered the questions very quickly without much thought given to refinement. There was, however, one exception to the interesting likeness between the sense of self-worth and the perceived influence of reflection: Student 4 allocated 7 out of 10 to the feeling of self-worth but only 2 to the impact of reflection on these feelings. Thus, Student 4 may have been the only one who perceived things this way or may have interpreted the question differently from the other students.

Comparison of Questions 4 and 5 (see Table 6) reveals that 5 out of 8 students felt that reflections contributed to personal achievement equally or more than to group achievements. Could it be that the principles of co-operative learning, including reflective processes, were new to the students and that the relatively short span of time spent on this learning approach did not enable them to experience and appreciate its benefits fully? Participants would have been justified to challenge the real cause of improved group achievements. Student 6, for example, believed that the longer group members learned about each other and worked together, the greater the group achievements, irrespective of reflective processes in which students might have engaged. This explanation

Table 6

Comparison of Questions 4 and 5

Focus: reflections impacted on personal achievements (Q. 4) and reflections contributed to group achievements (Q. 5)		
Student No.	Scores (Q. 4 : Q. 5)	Summary
1	7 : 9	Generally, students agree that reflection contributed to personal achievements.
2	8 : 6	
3	9 : 9	
4	10 : 3	
5	8 : 3	
6	1 : 1	
7	6 : 7	
8	8 : 9	
Means	7.2 : 5.9	

cannot be ignored despite the fact that it does not take into consideration the compounding effect that reflection might have exercised during the ‘getting to know and working with you’ phase.

Turning now to Questions 1 and 7, to compare the students’ feelings of self-worth with those of being accepted (see Table 7), individual students allocated similar scores to both questions. The responses indicate that, overall, participants felt valuable and accepted. The only exception was Student 6, who did not feel valuable but felt well accepted, with scores of 1 and 10 respectively. An explanation for this low sense of self-worth, which was provided by Student 6, is presented on Table 7.

Table 7

Comparison of Questions 2 and 7

Focus: feels a valuable group member (Q. 2) and feels accepted (Q. 7)		
Student	Scores (Q. 2 : Q. 7)	Summary
No.		
1	10 : 8	Generally, students who feel valuable feel well accepted and students who feel less valuable feel less accepted.
2	7 : 7	
3	9 : 8	
4	2 : 8	
5	4 : 4	Exceptions: Students 4 and 6 who do not feel valuable but feel well accepted.
6	1 : 10	
7	6 : 7	
8	9 : 10	
Means	6.0 : 7.8	

When considering questions 6 and 7 (see Table 8), the responses denote that while 5 out of 8 students feel both part of the group and accepted, the other 3 students perceive that they are either part of the group or accepted but not both. While Student 5 does not feel particularly well accepted despite feeling part of the group, Students 4 and 6 do not feel part of the group despite feeling well accepted. Student 6 explained, during a class discussion, that although his contributions were highly valued by the other group members, this 'value' was relative because it depended very much on the developmental levels of the other students. A valid qualification, such a discriminating comment also suggests a high level of thinking. It could, however, indicate that Student 6 feels he operates at a higher level than the other participants and than that required by the group processing questions.

Table 8

Comparison of Questions 6 and 7

Focus: feels part of the group (Q. 6) and feels accepted (Q. 7)		
Student	Scores (Q. 6 : Q. 7)	Summary
No.		
1	9 : 8	Overall students feel part of the group and they feel accepted.
2	7 : 7	
3	9 : 8	Exceptions: Students 4 and 6 who, despite feeling accepted, do not feel part of the group.
4	2 : 8	
5	7 : 4	
6	4 : 10	
7	7 : 7	
8	10 : 10	
Means	6.9 : 7.8	

Comparison of group results.

Table 9 provides a summary of the analysis of the individual responses arranged according to the groups to which students belonged. There were two main reasons for presenting such a summary: to condense and clarify the data analysis, and to allow for appraisal of the data on the basis of how students were grouped.

The analysis of the responses from Students 3 and 5 from Group 1 suggests that both participants felt part of the group and found that reflection helped in personal achievements. Students 3 and 5 disagreed, however, about the impact of reflection on both group achievements, for which the respective scores were 9 and 3, and their senses of belonging, for which the respective scores were 7 and 4. Another major difference was the self-perceptions of the

Table 9

Summary of Individual Responses (based on the scaled questionnaire)

Student	Lowest score	Highest score	Comment
group 1	7/10 Reflection	9/10 Valuable group member,	Overall positive
3	influenced sense of belonging.	reflections have helped in that, also in becoming more accepting and in personal and group achievements, feels part of the group and accepts others well.	
5	3/10 Reflections had little influence on both group achievements and sense of belonging.	8/10 Reflection helped in personal achievements.	Inconsistent: feels part of the group 7/10 but feels neither accepted by others nor a valuable group member 4/10.
group 2	7/10 Reflection had	10/10 Valuable group member;	Overall positive.
1	only some influence on personal achievement.	reflection helped in that regard; accepts others well; reflection helped to develop sense of belonging.	
6	1/10 Not a valuable group member; reflection did not help in any way.	10/10 Feels accepted by the group members (but does not feel part of the group 4/10).	Overall quite negative.
7	5/10 Only an averagely valuable group member.	7/10 Reflection had some influence on group achievements, feels somewhat part of the group and accepted, does accept others fairly well.	Fairly uncommitted.

Table continues

Table 9 cont.

Student	Lowest score	Highest score	Comment
group 3	6/10 Reflection had	8/10 Reflection helped to	Fairly uncommitted.
2	not much of an influence on group achievements and did not influence the sense of belonging much.	become more accepting and in personal achievements, accepts others well.	
4	2/10 Reflection did not help to become a more valuable group member, does not feel part of the group, reflection had no influence on group achievements, does not accept others.	10/10 Reflection has helped to become more accepting and contributed to personal achievements.	Strange: feels a fairly valuable group member 7/10, has become more accepting 10/10 but does not accept others 3/10, does not feel part of the group 2/10 but does feel accepted 8/10 and a valuable group member 7/10.
group 4	8/10 Reflection did	10/10 Feels a valuable group	Overall positive.
8	only help some in personal achievement and sense of belonging to the group.	member, reflections helped to become more accepting, feels part of the group and accepted, accepts others well.	

participants' value to the group, respectively 9 and 4.

These responses are more easily understood when they are considered together with the results from the preliminary investigation, which revealed that group members were getting to know each other and learning to work together. While Student 5 had, during the Group Investigation (GI), been shy about coming forward and requesting clarifications, Student 3 had lost patience and failed to respect the other group members' needs. Since then, the researcher observed that Student 3 consistently displayed greater consideration for her learning partners; in addition, Student 5 reported, in a casual discussion with the teacher, getting a lot of help from Student 3.

It is believed that focusing on supportive behaviours in the preliminary study may have been a vital element in turning a potentially negative learning experience into a positive one. The lack of respect, lack of understanding and lack of confidence of the group members could easily have been aggravated. Had their thoughts and actions not been guided by the group processing questions, students may not have been able to evaluate their actions and respond as constructively as they did. Had they not been familiar with what constitutes supportive behaviours, students may have focused on the negative aspects of their interaction with other group members and, as a result, been unable to develop an effective learning environment and experience success. Furthermore, the structure of group processing may have served as a mediator between the students because it enabled them to distance themselves from the situation and students may have been more objective than if they had been more emotionally involved.

The group processing questions and responses may have enabled Student

3 both to realise how her lack of consideration affected others and to take action to remedy the situation. The group processing questions may also have enabled Student 5 to become aware, first of her needs, and later of how the changes in Student 3's behaviour contributed to satisfying her needs and facilitating her academic progress. Whereas Student 3 was in a position to help Student 5 achieve on the individual level and be better able to contribute to the group task, Student 5 was concerned by her own lack of understanding and the difficulty she had in receiving the help she needed. In other words, by looking beyond her own needs at those of others, Student 3 had a wider angle view of the situation than Student 5 who was focused primarily on her individual learning needs. In this respect, Student 3 was better placed to be more positive about both the impact of reflection on the group achievements, and her value as a group member, than Student 5.

The responses from Group 2 comprising Students 1, 6 and 7, who had been working as a group throughout the whole study show that, apart from feeling well accepted, these participants perceived the effect of reflection differently. What is interesting is the apparent relationship between how valuable group members perceived themselves and how helpful they viewed reflection to be; the more valuable participants felt as group members, the higher the score given to the influence of reflection on both their worth as group members and the group achievements.

The responses from Group 2 are a good reminder that teachers' observations can be deceptive. Throughout the duration of the study, Students 1, 6 and 7 gave the impression of working well as a group. Their comments, which indicated their apparent willingness to compromise their preference for individual

work for co-operative work, together with the quality of both the group work and interactions, had been perceived as signs of a healthy transition between their comfort zones and the unknown territories of co-operative learning. While Group 2 appeared to be working well, the comments of its members, which were somewhat reserved about the influence of co-operative learning and reflection, allowed for greater depth in the interpretation of the situation. When all had been taken into consideration, the responses from Group 2 did not come as a total surprise; they did, however, raise a number of issues relating to the implications for teaching and future research which will be discussed in Chapter 5, namely, that students' perceptions must be taken into consideration because they can provide information which might have escaped teachers' observations. For example, one student's dislike of, or reservation about, co-operative learning might influence the other group members' perceptions of the benefits of such a learning and teaching approach.

The responses from Group 3, comprising Students 2 and 4, suggest that both participants felt that reflection contributed to the development of their ability to accept others; although reflection was perceived to impact on their personal achievements, it was seen as having little or no influence on group achievements. The main difference is found in the perceptions of Students 2 and 4 regarding their levels of acceptance with respective scores of 8 and 3 out of 10. Given the fact that these two students had been subjected to frequent and unavoidable group changes, they might not have had the opportunity to settle into a group and benefit from the continued association with the same students. In view of the attitude displayed in class, one might question whether Student 4 felt perhaps superior to the other group members and, for this reason, found it difficult to feel part of the group and accept students whom she perceived to have low academic

abilities. Should this be the case, it has the potential to provide ground for future studies into the effect of students' perceptions about their group members' cognitive ability on their own senses of acceptance.

Window on Focus Group Interview

Five students took part in the focus group interview which was conducted by the teacher-researcher. The aim of this discussion was to probe more deeply into the students' perceptions of the effect of reflection, particularly on their feelings of self-worth and belonging. The students' responses are summarised in Table 10. These responses are rank-listed according to the number of students who shared the same belief. Except for Student 6 who had a negative view of co-operative learning and reflection, every student perceived reflection as valuable because it fostered growth and improvement. This was particularly true in regard to three distinct but complementary areas: interaction, achievement and broadening one's horizon.

As "Psychological phenomena can often best be understood by study of extreme cases" (Walberg, 1988, p. 76), contrary results, such as Student 6's responses, are valuable to researchers because they encourage further questioning. This probing has the potential to uncover variables which otherwise would have remained unidentified. It is the discovery of these factors which then allows for their exploration. It was, therefore, fortunate that, despite its size, the small sample comprised a participant whose views differed from the rest of the group.

The issues raised by Student 6's results will be followed in the discussion section of this chapter. As for the presentation of the results of the focus group interview, it has been deemed suitable, for simplicity and clarity reasons, to establish his position now. That is, Student 6 believed that reflection was of little

Table 10

Interview Summary

Students' Beliefs	Student No and their beliefs				
	(see note)				
	1	2	3	7	6
• Reflection has a positive impact on communication skills and relationships	✓	✓	✓	✓	
• Reflection: debriefing is most valuable because you hear other view points/see things from different angles	✓	✓	✓	✓	
• Reflection encourages individual contributions, makes you aware of what has been done and strengthens feelings of achievements	✓	✓	✓	✓	
• Reflection helps to identify weaknesses and strengths; it makes improvements possible and provides encouragements		✓	✓	✓	
• Reflection makes you think more	✓	✓	✓		
• Reflection helps to become aware of own and others' value; in turn, this provides greater confidence and senses of self-worth and belonging			✓		
• Reflection benefits personal life			✓		
• Reflection helps to be more aware of others and to maintain focus			✓		
• Reflection is of no use; improvements are the result of people knowing each other better and feeling more comfortable					✓

Note: The checks indicate that the particular belief was held by the Student No. x

use. Consequently, in the following section, the expression 'all students' should be read as 'nearly all students'.

All students believed that reflection impacted positively on the communication skills of the group members and on the interpersonal relationships within the group. Extracts from the interview show that the students' views in this regard were explicit:

Student 3: "I think I found a lot of benefit not so much, oh well within the group itself but in the larger group as well because it [reflection] makes you more aware that everybody is going through the same process too and I think that just from my own observations that we are all relating much better and we are all able to express our opinions better We're sharing ourselves more and they don't hold it against you if you don't think clearly; that's simply pointed out to you."

Student 7: "It is listening to what everyone else has contributed to and the fact that most people ... are prepared to either answer you or at least listen to you and what you're trying to say to them."

Similarly, students agreed that reflection both enhanced their individual contributions and strengthened their feelings of achievement. Students reasoned that reflection made them aware of what had happened and what had been done.

Student 2: "[Reflection] helped me like know what you were good at and what you weren't so good at so that when you are in another group later, like you could know what to work on, to help you contribute to that group."

Student 3: "I think that reflection processes have definitely helped us clarify what it is that we'd actually done to evaluate whether or not we'd

done a good job of it Hm, I think perhaps that because I am keeping my mouth shut a little bit longer I am able to think a little bit more clearly and because I've waited for more information I've probably got a better base to work from when it comes to my turn to have an input."

All students perceived debriefing as one of the most valuable aspects of reflection because they could hear other viewpoints and see things from a different perspective.

Student3: "When this reflection has been shared with others and we've received other people's reflection, that has certainly helped a lot to make us see things differently because sometimes...because someone else is seeing it from their perspective. We may not be aware of little errors that we are making, hmmm, whether it is in behaviour or in our thinking [] and they help point that out."

Student 7: "[] you do hear other people's viewpoints, and also, hmm, sometimes it is the way they have gone about it; you can learn from the way they have done the task".

In addition, a couple of students perceived reflection as helping them identify both strengths and weaknesses and, as a result, making improvements possible. More specifically, participants observed that, by talking about areas which could be improved, group members were then in a position to help a particular individual progress because everyone knew exactly what had to be done.

Student 3: "In the group I wasn't even aware that I wasn't listening until someone pointed that out ... and so I was then able, the next time in the same group, to sit back and listen; and wait until everybody else

had had their say before I put my piece. And that's helpful to me because I really needed to practise that.

Student 2: "I reckon that it helped other people in the group know what they were doing good and what they were doing that they could be helped with next time ... it's not just your weaknesses, though; as well, it's like encouraging people for something good they've done within the group."

Most students felt that reflection encouraged them to think more, not only once the activity had been completed but also during the task. Some students reported that, when they were first introduced to reflection, they found the questions difficult to answer. One could query whether, in the weeks following, participants might have tried to anticipate the reflection questions at the same time they were engaged in the learning activity. For this reason, students might have adopted a deeper learning approach. Another aspect of reflection, the wording of the questions, was mentioned as "[making] you look at the situation differently and think 'Oh, I didn't think of that', or 'I didn't think of it that way'." These comments reinforce the researcher's belief that to maximise the effect of reflection, the wording of the questions needs to be closely connected to the overall aim of the reflection.

Student 3 related how reflection helped her develop an awareness of not only her own but also others' value, "That's like 'Ah yes, OK, I'm getting there, I'm getting better' and my value is increasing to the team and so is theirs [and] because you feel valuable, if you like, it increases that sense of belonging to the team, or that group." In turn, this awareness also contributed to increasing her self-confidence as testified in the following extract: "Those reflection questions can make me aware of my strengths and weaknesses and I can carry this new

information with me ... and I'm much more confident outside now."

In short, analysis of the focus group interview indicates that reflection was perceived by 4 of the 5 students who participated in the interview to foster the communication, interaction and participation of co-operative learners. The reflection questions and their wording were regarded as promoting thinking and examining learning and interpersonal relations from different angles; thus, reflection was deemed to broaden students' horizons.

The responses from Group 2 comprising Students 1, 6 and 7, who had been working as a group throughout the whole study, show that participants recognised debriefing as highlighting their strengths and weaknesses; it was also viewed as facilitating changes of behaviour or attitude and allowing progress. For this reason, debriefing was considered a vital part of reflection.

Discussion

When the findings from the scaled questionnaire and the focus group interview are appraised side by side, the results of the latter not only confirm but also provide possible explanations for the results of the former. First, the results from the scaled questionnaire, which indicated that students perceived reflection as impacting on the development of acceptance, together with the teacher's observations of students asking for more acceptance, support the view that, for some students, feeling accepted ranked very highly as a need. Second, the results from the scaled questionnaire also indicate that the higher the participants' feelings of self-worth and belonging the greater the perceived impact of reflection on these feelings. This relationship can possibly be explained by one of the most important findings of the preliminary study which uncovered that the development of interaction and organisational skills appeared to precede that of conceptual understandings. In this study, the specific valuable behaviours against which

students were rating their worth - listening, sharing and discussing ideas, encouraging, setting goals and evaluating individual and group performances - comprised interaction competencies and organisation skills whereas the students' perceptions of the influence of reflection on their feelings of self-worth depended on their understanding of the concepts of co-operative learning and reflection. Alternatively, should the perceptions of the influence of reflection depend on the students' levels of self-worth, then the development of self-worth should become a priority in educational settings. Third, the overall results of this study reveal that reflection is a complex cognitive task; one that requires higher level thinking like clarifying and understanding, analysing, comparing and summarising. For these reasons, the perceived benefits of reflection possibly depend on the students' levels of cognitive development or conceptual understanding.

Most of the participants in this study used reflection as a means to voice their need for greater acceptance. This often took the form of referring to what other group members were doing that prevented them from feeling accepted. For example, poor listening skills were regularly mentioned, particularly in the early stages of the study. The students' feelings in this regard relate to the fact that when one is not listened to, one feels ignored whereas when one is listened to, one feels some degree of acceptance. This strong need for acceptance could, in fact, have greater implications than it first appeared because the results of this study also point towards a link between the levels of the students' feelings of acceptance and self-worth.

The students' responses to the scaled questionnaire indicate that the more valuable participants felt as group members, the greater the perceived effect of reflection on their self-worth. Similarly, the more the students felt they belonged to the group, the greater the perceived effect of reflection on this feeling. These

responses denote a possible relationship between how valuable group members perceived themselves and how helpful they considered reflection to be. This possible relationship, which so far exists at an intuitive level only, has yet to be defined. In this regard, one could consider Guay, Boivin and Hodges' (1999) study into the dependence of self-evaluations on friends' performance. The findings of the study indicate that, when students compare their performance with that of their friends and when their friends' performance was perceived as higher than theirs, self-evaluators tend to perceive their own value as inferior by comparison. It is the researcher's belief that, by Week 13, students in the class considered their study partners as friends because they represented their major source of support and in some cases of adult contact. One could, therefore, envisage that in this study students may have rated their senses of self-worth by comparing their value with that of other students whom they perceived to be better than themselves.

When considering the strong need for acceptance, the correspondence between the senses of acceptance and self-worth as well as the apparent relationship between the sense of self-worth and the impact of reflection on this feeling, the need for acceptance emerges as a vital one. The main reason is that acceptance seems to be a pre-requisite not only for the satisfaction of other needs such as that of self-worth but also for the realisation that reflective processes benefit learning.

While some of the responses to the interview questions demonstrated depth and breadth of thinking, other responses remained at a basic level, possibly reinforcing that the students' primary concern was acceptance. The difference between the degrees of depth and breadth of thought expressed in the students' responses prompted the researcher to challenge whether students' perceptions of themselves, and of the effects of reflection, were linked to their levels of cognitive

development. More specifically, one may question, first, whether students at a lower stage of development focus primarily on their needs to feel accepted, and second, whether students at a higher stage of development focus on a wider range of issues like the learning objectives, individual and group achievements and the benefits of reflective processes on their learning. The teacher's observations of, and reflections on, the students' demonstrated academic skills and their responses to the questions asked in this study as well as the findings of the preliminary study are predisposed to support this idea. The composition of the sample group, which comprised students attending a pre-university course, must, however, be considered as this explanation might not apply to participants from a different background from that of STEPS students. Nevertheless, the implications for future research pertaining to groups similar to that of STEPS students, as well as for the implementation of co-operative learning, are serious. For this reason, these implications, which pertain to the development of interaction and organisation skills in relation to the feelings of self-worth and belonging, and to the content and depth of the questions guiding reflections, will be detailed and discussed in Chapter 5.

Student 6's negative attitude to co-operative learning and his belief that "reflection [was] of little use" is perhaps a timely reminder that, despite the teacher's conviction that co-operation benefited Student 6 and despite evidence in favour of co-operative learning, such a learning environment is not always well accepted or perceived as beneficial. In this study, the difference between the student's perceptions and the teacher's observations can be interpreted as a sign that Student 6 was not yet ready for, or accepting of, co-operation. In light of the literature review, research which focuses primarily on those students who do not accept or fully embrace co-operative learning seems to be scarce. Furthermore,

given “the shift to a focus on learning outcomes for all students” (Education Queensland, 1999c, November, p. 7), research into students who lack enthusiasm for, and seem to benefit least from, co-operative learning is overdue.

Another point which requires attention is the possible influence of Student 6 on the rest of the group. It must be remembered that Group 2 (Students 1, 6 and 7), despite appearing to work well together, had been explicit about their preference for independent rather than interdependent learning. Given the group members’ personality traits and general lack of self-confidence, Student 6’s attitude might have contributed to Student 7’s reservations about the benefits of co-operative learning.

The fact that only one student identified reflection as providing greater senses of self-worth and belonging does not imply that the perceptions of the remaining students necessarily differed widely. On the contrary, the participants’ beliefs that reflection encouraged better interpersonal communication and higher levels of acceptance indicate that reflection has the potential to impact positively on their senses of self-worth. Similarly, the students’ perceptions that reflection increased their feelings of personal achievement are also likely to raise their senses of self-worth in the future because their feelings of self-worth depend, to some degree, on their perceived achievements. More refined research instruments and group processing questions may help clarify the relationship between achievements and the senses of self-worth; thus, this issue will be examined in Chapter 5.

Conclusion

This chapter has presented and discussed the results of the scaled questionnaire and the focus group interview in relation to the research questions which examined the extent to which students perceive group processing as

influencing their feelings of self-worth and belonging. The results of this study only partially support the initial argument that reflection influences the satisfaction of the needs for self-worth and, to a lesser extent, belonging. The results, however, indicate that participants believed that reflection both influenced their levels of acceptance of one another and encouraged better interpersonal communication, particularly interaction and co-operation skills. The results suggest that, while the majority of students found that reflection had had a positive impact on their personal achievements, one student also perceived reflection as providing greater senses of both self-worth and belonging. In contrast, one student perceived reflection as having little influence on these two senses. Given the sample size of the study, these results cannot be generalised. It would, therefore, be interesting to conduct a similar research with a larger, more representative sample to verify these findings.

The results of this study also suggest that, as a principle of co-operative learning, group processing is more complex than it was first envisaged. That complexity was confirmed when the researcher conducted the focus group interview. Through this exploratory study which, to the author's best knowledge is the first to examine the impact of reflection on two of the students' basic psychological needs, reflection emerges as a high level cognitive task. In addition, these results uncovered areas which had not been previously considered but which require further investigation and, therefore, lead to several recommendations for future research.

The next and final chapter, Chapter 5, will first provide an overview of the study which will be followed by the limitations and a discussion of the findings. Finally, the conclusions, which can be deduced from these findings, and the implications for both teaching and future research will be addressed.

Chapter 5

Conclusions

This study, which was the second phase of a two-part investigation, examined students' perceptions of the impact that a co-operative learning environment implemented over a 13 week period had on their perceptions of their senses of self-worth and belonging. The study centred on one of the five key principles of co-operative learning; often named group processing, this principle is more commonly known as reflection. Based on the teacher-researcher's belief that students' basic psychological needs must be satisfied before they can learn effectively, this study can be consequential for students. It is also relevant for teachers because the resulting understandings can serve as a focus for selecting and implementing learning and teaching methodologies catering for students' needs. This study has the potential to uncover effective means of learning and teaching.

There were two research questions:

- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their senses of self-worth in a co-operative learning environment?
- ▶ To what extent and in what ways do students perceive that group processing, a principle of co-operative learning, affects their senses of belonging in a co-operative learning environment?

The first section of this chapter is devoted to an overview of the study, encompassing background information and a summary of the results. The second and third sections discuss the limitations and the findings respectively. The final section comprises the conclusions and suggestions for the implementation of the

findings as well as the implications for future research.

Overview of the Study

This study, which involved 8 mature age students in a Language and Learning class of a 'Studies for Tertiary Education Preparatory Skills' (STEPS) course at a regional Australian university, was conducted by their teacher who aims, amongst other things, at providing a learning environment and experiences which have the potential to satisfy students' basic psychological needs. Given her previous experiences and having undertaken a literature review of co-operative learning and needs theories, the teacher-researcher envisaged that students' needs could be met in a co-operative learning environment. More specifically, it was assumed that one principle upon which co-operative learning is based, group processing, could be instrumental in meeting the students' needs for self-worth and belonging.

Group processing may be defined as "reflecting on a group session to a) describe what members actions were helpful and unhelpful and b) make decisions about what actions to continue or change" (Sharan, 1990, p. 32) and in the words of Johnson, Johnson and Smith (1998, p. 29) as "the identification of ways to improve the process members have been using to maximise their own and each other's learning". Group processing, generally referred to as reflection, has been highlighted in the co-operative learning literature as benefitting students' learning because it helps them focus on their behaviours and the outcomes of their behaviours. Similarly, group processing was identified in the literature as a valuable learning tool because it helps learners to focus on reality. The necessity to see things 'as they really are' has been emphasised by Bandura (1986), Gibbs (1981) and Glasser (1965, 1986) as well as Mezirow (1991, p. xiii) who qualified

the statement and specified that "...scores of studies...have found that it is not so much what happens to people but how they interpret and explain what happens to them that determines their actions, their hopes, their contentment and emotional well-being, and their performance". For this reason, the students' perceptions were to become a vital ingredient of this investigation.

Group processing, an integral part of co-operative learning, was identified by the teacher-researcher as a key factor in the development of a supportive environment such as that promoted by co-operative learning. Furthermore, of the five principles upon which co-operative learning is based, group processing has been the least researched. In recent years, the exploration of reflection, of which group processing is a sub-division, has, however, extended to the fields of professional and personal development where it was found to enhance human inner resources (Covey, 1994; Glasser, 1994). Thus, research on group processing, chosen here for its potential to help students meet their needs for self-worth and belonging, was timely.

For the purpose of this research, the foci of the literature review have been the needs for self-worth and belonging, which are considered as two of the basic psychological needs of students (Glasser, 1965, 1969, 1994; Maslow, 1970; Slavin, 1988; Woolfolk, 1993), as well as one of the five principles upon which co-operative learning is based: group processing. This review explored strategies to implement group processing in different settings ranging from the defence forces to educational environments. It also uncovered the role both individual perceptions and reflection play in the construction of affective and cognitive knowledge.

This investigation differs from previous research projects on group

processing which compared either co-operative groups with group processing and co-operative groups without group processing (Yager et al., 1986) or teacher-directed group processing with student-directed group processing in co-operative learning settings and with students working individually (Johnson et al., 1989). In view of the evidence that group processing promotes learning (Johnson & Johnson, 1994; Johnson & Johnson, 1998; Kagan, 1994; Sharan & Sharan, 1992) and that small group processing is more effective than large group processing (Johnson et al., 1989) further research examining whether reflection benefits students would not have been as constructive as those earlier research projects. This study, which incorporated teacher- and student-directed group processing, was not about whether group processing benefits students; it was about the extent to which students perceive group processing as contributing to the satisfaction of their needs for self-worth and belonging.

This study is the second phase of a two-part investigation which took place over a 13-week period with one three-hour weekly lesson, during which time Think-Pair-Share activities (TPS) and Group Investigation (GI) were the learning structures of a Language and Learning course. The length of the co-operative learning sessions varied between 20 minutes in the first week of the preliminary study and up to 60 minutes in subsequent weeks to culminate with a two-and-a-half hour session for the Group Investigation in Weeks 11 and 12. The content of the lessons ranged from writing paragraphs to organising text and reading techniques. Group members also practised well defined group roles such as those of task manager, encourager, scribe and time keeper. In their efforts to develop a supportive and co-operative learning environment and to complete the set tasks, students set, implemented, evaluated and reviewed goals. Students

reflected first on how supportive they were of each other and later on their progress in developing supportive behaviours and achieving learning goals. In Weeks 11 and 12, students planned, prepared and delivered a presentation in groups of three to four. In the first phase of the investigation, which focused on the implementation of reflection, the data were gathered via guided reflection questions. In the second phase, which focused on the students' perceptions of the effects of reflection on their psychological needs for self-worth and belonging, the data were collected through a scaled questionnaire and a focus group interview.

The items on the scaled questionnaire and the focus group interview were developed specifically for this study and supplied two complementary sources of information. The scaled questionnaire produced numerical information which provided general trends about the students' perceptions of the impact of reflection on their feelings of self-worth and belonging. On the other hand, the students' contributions to the focus group interview added in depth and detailed verbal information. The responses to the scaled questionnaire were taken into account when developing the questions for the focus group interview. Both groups of questions targeted the students' perceptions about the benefits of reflection on their senses of self-worth and belonging as well as acceptance.

While all 8 students completed the scaled questionnaire at the beginning of Week 13, only 5 took part in a focus group interview at the end of the same week. In both cases, participants were required to evaluate the benefits of reflection, as they perceived these benefits with regard to their feelings of self-worth and belonging. Whereas the scaled questionnaire required students to rate the perceived impact of reflection on their senses of self-worth and belonging, the interview enabled students to express what was most important to them and to

provide comments far beyond a single digit answer. For the scaled questionnaire, the data collected were sorted using both the individual and the sum of numerical responses. Furthermore, the data were sorted by comparing some responses, two questions at a time, so that further relations, if they existed, could be identified. For the interview, the transcript was margin-coded and classified before being ranklisted and tabulated.

The students' descriptions of their perceptions were vital in this study because the objective was to understand the meaning of the experience. This choice of research perspective was in line with the current belief that human encounter cannot be explained by numbers; that educational research is best served by an environment which allows for descriptions, for words rather than numbers (Merriam, 1988; Robson, 1996; Stake, 1978). Providing an understanding which cannot yet be logically explained, the study of participants' perceptions of their experiences assists both researcher and readers in their construction of knowledge (van Manen, 1990). This is not to say that quantitative instruments should be forgotten; on the contrary, numbers can quickly provide information which, in turn, can be used to give direction and purpose to qualitative instruments; qualitative and quantitative methods can constructively complement each other (Denzin & Lincoln, 1994; Robson, 1996), as was the case in this study.

This research is consequential not only for students' cognitive and affective achievements but also for teachers' professionalism. By focusing on students' perceptions of reflection and on the needs for self-worth and belonging, this study has the potential to provide teachers with a deeper understanding of the cognitive and affective forces at play and their effects on students' learning. The knowledge and understanding acquired through research have the potential to contribute to

teachers' abilities to make professional choices, that is, choices based on theory and research.

Teachers' professionalism, a vital factor in the quest for effective learning and teaching, encompasses teachers' preparedness to further their education, willingness to assume their responsibility and an awareness of their students' needs. Potentially an example of teachers' professionalism, studies such as this one may uncover variables which affect effective learning and teaching and which, so far, have not been identified. Consequently, teachers' professionalism promotes change in the educational field: change which is not a choice any more, but a pressing and inescapable challenge.

The research presented here provides evidence that group processing, in a co-operative learning environment, helped students express their affective needs and monitor their behaviours and achievements in terms of these needs. This study demonstrates that the participants perceived reflection as contributing, to some extent, to the satisfaction of their needs for self-worth and belonging and to a greater degree to those for acceptance; it further suggests that a relationship may exist between the participants' perceptions and their levels of cognitive and affective development.

In addition, the results of this study show that the information gathered through the scaled questionnaire and the focus group interview complemented each other. In particular, the interview helped not only to clarify but also to deepen the understanding acquired through the results of the scaled questionnaire. The results, however, have also highlighted some of the limitations of the methods. These limitations require consideration because they impact not only on the findings of this study but also on the planning of future research.

Limitations

By limiting the investigation to one class cohort of STEPS students and to the first half of the 26 week course, a higher than anticipated attrition rate not only influenced the sample size but also impacted on the findings beyond expectations. The complexity of the topics under scrutiny, group processing and the needs for self-worth and belonging, was another limitation of this study. These two limiting factors will be discussed separately.

Sample Size

Originally, the sample chosen for participation in this research comprised a class cohort of 29 mature age students undertaking a 'Studies for Tertiary Education Preparatory Skills' (STEPS) course on a part-time basis over a 26 week period. The course, which aimed at bridging the gap between the students' present skills and the academic skills required for tertiary education, attracts a clientele looking for a new direction and a fresh start. Most students were, initially, unaware of the need to manage themselves and their time. Others, unemployed at the beginning of the course, were offered a job and found themselves in a new situation which did not allow for part-time study. As a result, about 50% of the students attended the weekly classes on an irregular basis for the first 10 weeks of the course before withdrawing completely.

Irregular attendance and attrition affected the composition of the co-operative groups insofar as consistency and size were concerned. While only one group remained intact throughout the duration of the study, one participant was never in the same group. As this lack of consistency may have had an influence on students' feelings of belonging, the findings relating to the students' perceptions of the impact of reflection on their senses of belonging must be read

with this limitation in mind.

The high attrition rate indirectly contributed to students accepting the possibility that they too might have to withdraw from the course. Their lack of confidence added to the stress already experienced by the demands of the course which increased throughout the semester; thus, voluntary participation in a group interview was, for some students, too high a demand, and the number of participants was finally reduced to 5. These 5 students were not representative of STEPS students as a whole. Instead, they characterised successful STEPS students, a minority of students albeit of different backgrounds and at different developmental stages.

The Complexity of Group Processing and the Feelings of Self-worth and Belonging

The foci of this study, group processing and the senses of self-worth and belonging, are difficult notions to understand. The questions on the scaled questionnaire and in the interview focused on the students' perceptions of reflection on these feelings. It must be stressed that these perceptions were at an embryonic stage. First, as students were getting acquainted with reflective processes, they had little time to think about reflection itself. Second, students were also developing an awareness of their feelings of acceptance, self-worth and belonging, and familiarising themselves with expressing these feelings. Third, students were asked to reflect about the impact of reflection on feelings they were still exploring. In other words, students were required to perform at a high cognitive level, in most cases, based on rudimentary knowledge and understanding. For these reasons, the tasks students were asked to complete, to reflect on the act of reflecting, represented a high level of difficulty.

Throughout the preliminary study, learning experiences had been scaffolded to facilitate students' familiarisation with the concepts of group processing, self-worth and belonging. Group processing had been explained and practised; self-worth and belonging had been discussed in the context of developing a supportive learning environment. Acceptance had also been addressed on students' demand. Despite these preparatory activities, the difficulties students experienced with regard to the complexity of the task became evident when the students' responses were collated and later analysed.

Whereas some of the responses to the scaled questionnaire appeared to be inconsistent when compared with responses to similar questions, some of the students' answers to the interview questions were uncommitted, superficial and limited. Whenever the teacher-researcher asked students about their feelings of either self-worth or belonging, in relation to the act of reflecting, the students seemed unwilling to address the question fully. Instead, students disclosed their perceptions of co-operative learning and reflection in general. In retrospect, it could be questioned whether some students might have avoided providing direct answers because, despite the preparatory activities, they were unsure about their senses of self-worth and belonging.

With regard to the impact of reflection on their feelings of self-worth and belonging, some students, when prompted by the teacher-researcher, responded with 'yes' or 'hm, it's true'. Student 6's responses, which were restricted to, "Didn't think much about it" or "It doesn't have much effect to me at all...I don't care about this" or "I have no idea", seemed to support the view that, given the demands of STEPS courses, students had few opportunities to think about reflection and its impact on their senses of self-worth and belonging to any great length.

While a study of a longer term than this investigation would enable students to develop a greater understanding of the concepts under examination, the number of variables that could intervene to disrupt the study could increase in proportion to the length of the research project. In the context of studies into learning environments, this study was not a short study. In fact, in the field of co-operative learning, Slavin (1977) acknowledged the need for several week long studies and recommended that researchers conduct studies spanning four weeks or more. By juxtaposing the preliminary and the main studies, the design of the investigation maximised the length of this study. Instead of a one week long study into the students' perceptions of the influence of group processing on their senses of self-worth and belonging, the 12 week long preliminary study allowed for developing a supportive environment, preparing students for co-operative learning and implementing co-operative learning strategies. Despite experiencing some degree of difficulty with the complexity of the concept under investigation, students were more familiar with these concepts than if they had not been exposed to the preliminary study.

Discussion of the Findings

The findings, which are drawn from the results presented in Chapter 4, pertain to the two research questions introduced in Chapter 1. First, analysis of the findings indicates that reflection assisted students to modify their behaviour and develop interpersonal skills with regard to contributing to the satisfaction of students' needs for acceptance. The implication for STEPS teachers might be greater than for other teachers as the STEPS students in this study displayed extremely high needs for acceptance, possibly because of past schooling years during which they may have experienced academic and social difficulties. The

satisfaction of the need for acceptance also emerged as a possible condition for the satisfaction of other needs such as those for self-worth and belonging.

Second, it can be suggested that the greater the students' perceived senses of self-worth and belonging, the greater the perceived impact of reflection on these feelings by the students. The relationship between the students' senses of acceptance, self-worth and belonging, and their perceptions of the influence of reflection on these senses, requires further exploration because it has the potential to contribute to needs theory, according to which needs such as those for self-worth and belonging must be met before effective learning and teaching can take place (Glasser, 1965, 1969, 1986, 1990; Maslow, 1970). These issues could be considered together with one of the most important findings of the preliminary study which identified that the development of interaction and organisation skills appeared to precede the development of conceptual understandings. The main reason for treating these issues together is that the ramifications of one finding might help explain other outcomes and give direction to future studies. Thus, the yet unidentified connection between the students' perceived senses of acceptance, self-worth and belonging, and their perceptions of the impact of reflection on these senses, together with the apparently successive development of interaction and organisation skills, might contribute to the identification of key elements and help maximise the effect of reflection on the students' senses of self-worth and belonging and indirectly on their learning.

The third finding in this study is that the benefits of reflection, which required higher level thinking skills, appeared to be linked to the students' levels of cognitive development. Students who indicated that reflection benefited their psychological needs for self-worth, belonging and acceptance displayed cognitive

and social behaviours that were more developed than those of their learning partners. For example, differences were observed in verbal and written communication skills and in the scope of interests and concerns.

These findings will now be considered according to the needs first for acceptance, then for self-worth and belonging as per the two research questions. Next, the complexity of reflection will be examined. The researcher felt that, despite the fact that acceptance was not a distinct research question, it deserved to be privileged with a section of its own rather than with a sub-section of self-worth and belonging. Furthermore, the strong evidence that acceptance was, in this study, more important than self-worth or belonging, justified that it be discussed first. This will be followed by the implications that this study has for teaching and future research.

Acceptance

In the questions on the scaled questionnaire, acceptance was originally incorporated into the needs for self-worth and belonging, as explained in Chapter 4, but the responses to the scaled questionnaire clearly indicated that students perceived reflection as benefiting the development of acceptance more than it did their feelings of self-worth and belonging. The prominence of not only the students' feelings of acceptance but also their perceptions of the impact of reflection on these feelings was an unanticipated and exciting outcome of the study.

The responses to the scaled questionnaire, which showed that students, generally, felt well accepted and perceived themselves as accepting others, mean that a high level of acceptance was demonstrated in the learning environment. As the responses also indicate that students perceived reflection as influencing their

ability to accept others, one might consider that the students' abilities to accept others and feel accepted increased throughout the duration of the investigation. The teacher's observations and communications with students also support this conclusion.

With regard to the levels of acceptance displayed in class, the students' progress in the early stage of the investigation can be linked to the way the teacher promoted the development of a supportive, co-operative learning environment as well as her expectations and reasons for choosing such an approach. These expectations and reasons, which were communicated clearly to the students throughout the first few weeks of the course, constituted a firm base for students' behaviours and attitudes. The notions of supportive environment and behaviours were discussed, specific behaviours were targeted, goals were set and the necessary interaction skills practised during classes. This was followed by guided reflections, at the end of which students shared their thoughts with the rest of the class. In some cases, reflection served as a mediator between students. As a result, students were able to communicate better and became more accepting.

The focus group interview provided further evidence of the students' increased levels of acceptance, as demonstrated by the following interview statement:

In the group I wasn't even aware that I wasn't listening until someone pointed that out [during reflection]... And so I was then able, the next time in the same group, to sit back and listen and wait until everybody else had had their say before I put my piece. And that's helpful to me because I really needed to practise that [Now] we are all relating much better and we are all able to express our opinions better.

Thus, there is evidence that reflection contributed to the improvement of students' interaction competencies in general and listening skills in particular, which is consistent with current theories and the research findings of Bellanca (1992), Cohen (1986), Hubert and Eppler (1990) and Kagan (1994).

Reflection also helped students realise that they could grow together and learn from each other as testified by the following interview extract: "[During reflection] you do hear other people's viewpoints, and also, hmm, sometimes it is the way they have gone about it; you can learn from the way they have done the task". This idea of co-operative learning, as opposed to individualistic or competitive learning, was shared by other students and supports the idea that students were ready to listen to, and learn from, each other and that they perceived reflection as pivotal in the development of their acceptance of the other group members as learning partners.

Reflection also contributed to raising the students' levels of awareness and acceptance of their past and present situations. The outcomes of reflection can now be presented as self-knowledge and self-acceptance at the first level, and acceptance of others at the next level. In sum, for the majority of students the perceived overall benefit of reflection was primarily the satisfaction of their needs for acceptance.

Self-worth and Belonging

The findings relating to each of the two research questions, the first regarding the senses of self-worth and the second those of belonging, share several commonalities. For effectiveness purposes, the results for both feelings have been treated together. The following discussion of the findings must be read within the context of the small sample size. It must also be reiterated that because

of attrition, the sample was representative of successful STEPS students and, therefore, does not allow generalisation.

The responses to the scaled questionnaire show that students who perceived their senses of self-worth and belonging to be low did not perceive reflection as influencing these senses while students who perceived these senses to be high perceived reflection as beneficial. These results can be interpreted in two different ways. One might be tempted to believe that students with low senses of self-worth and belonging indeed did not benefit from reflection otherwise their senses would be more developed. One might, however, interpret the students' responses as an indication that the students were not ready to work on improving their senses of self-worth and belonging. This interpretation leads to the conclusion that the importance and the benefits of reflection could be greater at certain times and in some situations.

In this investigation, the majority of the students considered that acceptance was an important issue and perceived reflection as beneficial. Their perceptions of the senses of self-worth and belonging, however, were not as unanimous as those for acceptance. While some students perceived that reflection benefited their feelings of self-worth and belonging, it seems that others did not perceive reflection as influencing their senses of self-worth and belonging, perhaps because the latter students were focusing on the satisfaction of their need for acceptance, which was very high. It appears that students perceived that reflection did not influence their senses for self-worth and belonging at this particular time, although it might do so at another time when these needs rank more highly than they did at the time of this investigation. Even though some theorists have identified the basic psychological needs such as those for

self-worth and belonging to be general human needs (Covey, 1994; Glasser, 1965, 1986; Maslow, 1970), teachers have long recognised and accepted that students' needs vary from one individual to another and that the needs of one person change over a period of time and from one situation to another.

In addition, based on the findings of the preliminary study that the development of interaction and organisation skills seems to precede conceptual understandings, it can be conceived that well developed interaction and organisation skills are necessary conditions for the satisfaction of students' needs for acceptance, self-worth and belonging. Mastery of these interaction and organisation skills, of which evaluation is an integral part, might allow students to develop an understanding of the concept of reflection and an appreciation of its benefits as far as learning and teaching are concerned.

The focus group interview revealed that although students saw reflection as improving their senses of achievement, most of them did not see reflection as influencing their senses of self-worth. This apparent inconsistency between the students' perceptions of their senses of achievement and self-worth can be explained by the following interview extract: "... that's probably just because the way I feel about myself; I don't have that much confidence within myself and I think that's probably because I am afraid of the failure." Reflection helped the student become aware of one of the causes of her self-doubt: fear of failure and lack of self-confidence. " I probably haven't noticed much difference but I know that other people have My ex-mother-in-law ... can see a difference in the way that I go about things."

Even though this student did not view reflection as influencing her sense of self-worth, reflection helped her become aware of her achievements and of the

changes in her behaviours that others had observed. Thus, reflection could well have initiated the beginning of a journey of self-discovery, potentially leading to the satisfaction of the needs for self-worth and belonging. This finding stresses the pressing need for researchers to identify the variables affecting the outcomes of co-operative learning beyond those that have been so far isolated.

One student, who reported spending a lot of time reflecting and who perceived reflection as increasing her senses of self-worth and belonging, offered this contribution:

Reflection processes have definitely helped us to clarify what it is that we'd actually done to evaluate whether or not [sic] we'd done a good job of it and then to decide ok that's what I'm at so far, how can I improve again next time? [With reflection] you become more aware of, not only your own value but everybody else's value ... that's like 'ah, yes, OK, I'm getting there, I'm getting better' and my value is increasing to the team and so is theirs Because you feel valuable, if you like, it increases that sense of belonging to that team, or that group.

The previous comments from two students, whose senses of self-worth, and whose perceptions of the effect of reflection on their senses of self-worth, differed considerably, highlight the fact that the outcomes of learning experiences vary from student to student. While the response of one student indicated a low level of self-confidence and a fear of failure, the response of the other student focused on reflective processes and their benefits to students' senses of self-worth and belonging. In this case, the major differences appeared to be the foci of the students' reflection and, possibly, their interpretation of the questions. These factors, which may have contributed to the students' perceived senses of

self-worth and their perception of the influence of reflection on these feelings, require further examination and might give direction to future studies.

Conclusions and Implications for Teaching and Research

The major outcome of this study was that the students' needs for acceptance were unexpectedly high. Not only were most students longing to feel accepted by the other class members but they also made their need for acceptance very explicit. The findings revealed that these students felt that their needs for acceptance had been met and that they perceived reflection as having influenced their feelings of acceptance. The unanticipated prominence not only of the students' needs for acceptance but also their perceptions of the impact of reflection on these feelings could give direction for future research and classroom practice. The emergence of acceptance as such an important variable also highlights the importance of students' perceptions. It is a good reminder that teachers ought to take students' perceptions into account when planning future learning activities instead of relying solely on their observations and knowledge because students' perceptions influence their behaviours.

Another conclusion of this study was that, for this sample, the benefits of reflection appear to have been linked to the students' levels of cognitive development. This conclusion was based on students' responses and the teacher's observations. For example, students whose reflections focused on their needs to be accepted were also experiencing difficulty with clarifying, expressing and organising their thoughts in an essay; with organising their personal life; with interacting with others in a meaningful way; with achieving; with improving their senses of self-worth and belonging. This is not to say that young students or students at lower cognitive levels cannot benefit from reflection but rather that

there are implications for teachers and researchers. Amongst other things, teachers could focus on the development of interaction and organisation skills to enhance students' senses of acceptance, self-worth and belonging as well as use reflection to promote further development of these skills before expecting students to evaluate the impact of reflection on these feelings.

In view of the results presented in Chapter 4 and of the discussion of the findings offered earlier in this chapter, there are implications for both teachers and researchers. These implications pertain to the complexity of reflection and of students' perceptions of their senses of self-worth and belonging, and their perceptions of the influence of reflection on these senses. More specifically, the consequences for teaching relate to the simplicity, clarity and focus of the reflection questions. Given the findings of this investigation, it could be argued that these questions ought to focus on interaction and organisation skills and the feelings of acceptance, self-worth and belonging before attempting to centre on conceptual understandings such as that of the impact of reflection on these skills and feelings.

The findings of this investigation point towards reflection questions as addressing different agendas, those of researchers, teacher-researchers and students. Students' responses provided evidence that reflection questions have the potential to promote students' cognitive gains. Teachers, therefore, may be well advised to consider, amongst other things, the multifaceted benefits of group processing and construct reflection questions to maximise the efficacy of this learning and teaching approach not only for the researcher's sake but also, and perhaps more importantly, for that of students.

There are other ramifications for future studies. First, there is a need to

address issues of reliability. The findings present acceptance as such an important need of students that it deserves pursuing. To this effect, it is necessary to establish the reliability of the instruments used to measure students' perceptions of the efficacy of group processing on their senses of acceptance, self-worth and belonging. A larger sample size together with a sufficient number of items would provide the opportunity to test the reliability of the scaled questionnaire.

Second, there may be a need to isolate the variables which influence the outcomes of co-operative learning. The findings show that the complexity of the research topic presented difficulties for students. One logical possibility could be to treat the feelings of acceptance, self-worth and belonging as entities. Hence, respondents would be required to analyse one sense at a time which may be easier than to consider all three senses at any one time.

Third, a critical implication for researchers may be the length and timing of research projects. Studies similar to this investigation and conducted early in the course could be important because feelings of self-worth and belonging may figure more prominently in the high attrition rate sample than with students who have persevered for longer. These types of studies, therefore, could help to reduce attrition rates.

In view of the findings, longer studies however would be beneficial for two reasons. They would give students the opportunity to become more familiar with, and better understand, the aims and advantages of co-operative learning and reflection. Given STEPS students' initially low levels of self-confidence, long term studies could also investigate whether reflection increases the benefits of confidence-building activities. Further, such studies could investigate whether the

students' levels of self-confidence determine their perceptions of the impact of reflection on their senses of self-worth and belonging. Should this be the case, then the development of students' confidence could be more prominent in educational settings. Long term studies would also allow, for example, to follow up with the same students further into their study and establish the extent to which the skills and understandings developed in a co-operative learning environment are transportable to other learning situations. This is not to say, however, that students would be exposed exclusively to co-operative learning methods for the duration of the research project because some learning situations lend themselves better to alternative approaches.

The demands of long term studies on researchers and participants are greater than those of short term studies which partly explains why the latter are more common. One might suggest that, in view of the difficulties associated with long term studies, some of the aims of long term studies presented here could be addressed by short term studies. For example, one may choose to test students early in the course and other students who are further ahead in the course concurrently. Several short term, independent studies, however, might introduce inconsistencies in the implementation of co-operative learning strategies and reflective processes unless these studies are carefully monitored and supervised by the researcher. Long term studies, nevertheless, reduce the risk of novelty and attention effects known as the Hawthorn effects (Stevens & Slavin, 1995). For these reasons, at some stage, long term studies may be necessary. Additionally, in terms of the effect of reflection on learning, long term research is overdue.

In sum, the aim of this study, which was to ascertain the students' perceptions of the impact of reflection on their senses of self-worth and belonging,

has contributed to research in the area of co-operative learning and students' needs in important ways. The study isolated the need for acceptance as a need which, when pre-university, mature age students aim at developing a co-operative learning environment, could possibly take precedence over the needs for self-worth and belonging. Furthermore, students perceived that group processing impacted on the satisfaction of their needs for acceptance. Assuming that the satisfaction of the needs for self-worth and belonging is a condition for effective learning and teaching, the outcomes of this study, therefore, suggest that the satisfaction of students' needs for acceptance may be a vital ingredient of effective learning and teaching. Moreover, further research into co-operative learning, and group processing in particular, with regard to acceptance is likely to be very worthwhile.

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Appendix A

Group Processing Skills Categorised

Category	Description
<u>Interaction skills</u> (affective knowledge)	<ul style="list-style-type: none">• sensitivity to the needs, problems and aspirations of others• ability to adjust one’s behaviour to work effectively with others
<u>Organisational skills</u>	<ul style="list-style-type: none">• ability to organise themselves effectively
<u>Conceptual understandings</u> (cognitive knowledge)	<ul style="list-style-type: none">• ability to filter perception and comprehension

Note. Adapted by the researcher from Kagan (1994) and Mezirow (1991).

Appendix B

Expanded Categories of Information

Category	Answers (key-word/phrase)
<u>Interaction skills</u>	
<ul style="list-style-type: none"> • sensitivity to the needs, problems and aspirations of others 	<ul style="list-style-type: none"> • helping • giving positive feedback <ul style="list-style-type: none"> • praising • appreciating • encouraging • smiling
<ul style="list-style-type: none"> • ability to adjust one's behaviour to work effectively with others 	<ul style="list-style-type: none"> • listening • requesting • questioning skills • paraphrasing • decision making • focusing • participating • communicating/sharing ideas • avoiding unsupportive behaviours <ul style="list-style-type: none"> • interrupting • disrupting • withdrawing/ignoring • side-tracked/off-task • impatience • lack of respect • co-operating

Appendix continues

Appendix B cont.

Category	Answers (key-word/phrase)
<u>Organisational skills</u>	
■ ability to work effectively as a group	<div>■ planning/preparation</div> <div>■ goal setting</div> <div>■ role assigning</div> <div>■ role competency</div> <div>■ time management</div> <div>■ assertiveness/confidence</div>
Conceptual understandings	
★ ability to filter perception and comprehension	<div>★ tolerance of perceptions different from own</div> <div>★ consideration of other possibilities</div> <div>★ appreciation of others' contributions</div> <div>★ integration of experience</div> <div>★ intensity of attention and span of awareness</div> <div>★ need for creativity</div>
<u>Key to symbols</u>	
	<div>● interaction skills</div> <div>■ organisation skills</div> <div>★ conceptual understandings</div>

Appendix C

Scaled Questionnaire

Student code:

Date:

You have participated in several co-operative learning activities of the Think-Pair-Share and Pairs-Compare type including reflection on how the group worked together. Now is a good time to evaluate such learning/teaching practices. On a scale of 1-10, where 1 is the lowest, indicating 'not at all', and 10 the highest, indicating 'strongly', circle the alternative which most reflects your perception of the situation.

	Not at all										Strongly
1. To what extent do you perceive yourself as a valuable group member?	1	2	3	4	5	6	7	8	9	10	
2. To what extent do you feel the reflections have helped you become a more valuable group member?	1	2	3	4	5	6	7	8	9	10	
3. To what extent do you feel the reflections have helped you become more/less accepting (more/less tolerant) of others?	1	2	3	4	5	6	7	8	9	10	
4. To what extent do you feel the reflections have contributed to your personal achievement?	1	2	3	4	5	6	7	8	9	10	
5. To what extent do you feel the reflections have contributed to the group's achievement?	1	2	3	4	5	6	7	8	9	10	
6. To what extent do you feel that you are part of the group?	1	2	3	4	5	6	7	8	9	10	
7. How well do you feel accepted by the group members?	1	2	3	4	5	6	7	8	9	10	
8. How well do you accept the other group members?	1	2	3	4	5	6	7	8	9	10	
9. To what extent do you perceive the reflections as influencing your sense of belonging to the group?	1	2	3	4	5	6	7	8	9	10	

Appendix D

STUDENT INFORMATION SHEET**Co-operative learning: The impact of reflection on students' perceptions of their senses of belonging and self-worth**

As a [*name of university*] Student you have been involved in co-operative learning (CL) in the English classes of your Studies for Tertiary Education Preparation Skills (STEPS) course. As part of your involvement in CL you have been asked to keep a journal of your experiences during class to guide you through the reflection process which is the final step in each CL session. You have also been asked to complete a questionnaire about your reactions. Both these activities are a normal part of my teaching and help me, as your teacher, to plan for your short-term and longer term needs and to improve teaching practice.

With your permission, I would like to analyse your journal and questionnaire responses in order to explore the possible impact that reflection in CL has on students' perceptions of belonging and self-worth. I would also like to invite some students to participate in a group interview session of up to two hours in duration to discuss some points further. This more formal analysis is part of a Master of Education Studies degree that I am completing at [*name of university*].

Involvement in this project will provide an opportunity for students to learn more about learning and teaching as well as each other's perceptions, and develop a better understanding of interpersonal communication; thus, it is potentially useful for further study and employment. It is expected that the outcomes of the study will contribute to both the existing body of knowledge in learning/teaching and your growth as a person.

Your decision regarding participation is in no way connected to academic results and you are free to withdraw from the project at any time without academic penalty. The interview will be audio-taped to assist with data analysis. Students who wish to be involved in the interview will be contacted to arrange a mutually suitable time to meet. Your identity will remain confidential outside the study.

Provision will be made for a short oral presentation of the study and its findings. In addition, the study full report will be available for your perusal, a copy of which will be kept by the Faculty of Education and Creative Arts on all coastal Queensland campuses.

Yours sincerely

Researcher's Name

Researcher's Position

Please contact my research supervisor, Dr Beverley Moriarty, on the Gladstone Campus of CQU (49 707 241) should there be any concerns about the nature and/or conduct of this research project.

Appendix E

STUDENT CONSENT FORM

Co-operative learning: The impact of reflection on students' perceptions of their senses of belonging and self-worth

Having read the Information Sheet, I hereby agree to take part in the study

'Co-operative learning: the impact of reflection on students' perceptions of their senses of belonging and self-worth'. I understand that my participation is completely voluntary and that I can withdraw at any time without penalty. I give my permission for any of the resources produced during the research (journal, questionnaire, interview) to be used for analysis and to communicate the results of the study. I understand that my identity will remain confidential outside the study.

Name (please print): _____

Signature: _____

Date: _____

Researcher's Name

Researcher's Position

