THE EFFECTS OF REGROUPING STUDENTS FOR LITERACY AND NUMERACY
IN PRIMARY SCHOOLS

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STATEMENT OF ORIGINALITY

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ABSTRACT

The grouping of students by academic achievement level has been practised in a wide variety of forms and contexts for over a century. Despite a general consensus in the literature that between-class achievement grouping provides no overall benefit for students, the practice has continued in various guises. Currently between-class achievement grouping is quite common in high schools, particularly for mathematics, and is also practised in some primary schools in Australia and overseas. This study examines both the academic and affective outcomes of between-class achievement grouping in literacy and numeracy lessons in small samples of Australian primary schools. It also investigates the relationships of regrouping with teacher attitudes, classroom climate and classroom practices. A mixed method study was used to provide a comprehensive examination of the regrouping practice. Results from state-wide Basic Skills tests and Quality of School Life surveys are compared between two groups of schools – one set that regroups students for these areas, and the other set in which students remain in a mixed-achievement class for all subjects. Interviews with teachers and principals as well as classroom observations provide additional information which is combined with the achievement and affective outcomes to complete a rounded picture of regrouping practices and outcomes. Results indicate that the regrouping strategy affects teacher attitudes and is inhibitive of desirable teaching practices such as differentiation and knowledge integration. It is argued that the current regrouping practice closely resembles streaming and provides no apparent academic advantage although there may be some positive affective outcomes related to student perceptions of their quality of school life.

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CHAPTER 1

INTRODUCTION TO THE REGROUPING STUDY

Background to the study

Grouping students for learning is a well established practice. The natures of these groups vary according to context. One practice in New South Wales (NSW) primary schools is that prompted by the NSW syllabus organisation, whereby two year periods of learning termed "Stages" are covered. Hence, students may be grouped in Stages, classes and small groups, the latter taking a range of forms depending on the purpose. Whilst primary school students have traditionally been placed in homogeneous age classes where numbers permit, variations to this structure have become increasingly common. Primary classes are now rarely organised on the basis of overall academic ability (usually referred to as streaming), yet some primary schools in NSW are choosing to regroup students across classes (predominantly those in Stages 2 and 3: Years 3-6) for literacy and numeracy lessons, according to their performance on various assessment tasks. This type of grouping has been common in the UK where it is termed "setting" (Hallam, Ireson & Davies, 2004a). In the United States of America (US) it is referred to as "regrouping", and that term will be used here, as it was most often used by the sample schools in this study.

It is important that the term "ability grouping" be clarified here, with a view to establishing a definition to be used throughout this thesis. This term has been commonly and repeatedly used over a long period of time, but it can be misleading. As has been pointed out by other researchers such as Wiliam and Bartholomew (2004), what is actually described by the term "ability grouping" would often more accurately be termed "performance", "attainment" or "achievement" grouping. These groups are formed by grouping together students who have achieved similar results on a number of assessment tasks. "Ability" is an abstract term related to a student's potential, which is a different measure, sometimes determined through intelligence quotient (IQ) tests, rather than assessing attained content knowledge and skills. However, some of the older studies included in reviews referred to here may well have used aptitude or ability tests to regroup students (Rogers, 1991 cited in Tieso, 2003, p. 32).

Regrouping is a form of ability or achievement grouping, and is related to, but more complex than, the practice known as "streaming". Streamed classes are formed by allocating students to a particular class based on perceived overall ability, with students remaining in this class for all learning experiences throughout a school year. Streaming was common in the first half of the twentieth century, until multiple problems related to social and equity issues inherent in the system were reported in studies such as those by Jackson (1964) and Barker Lunn (1970). Where the alternative arrangement of students, the mixed ability classroom, is seen as problematic by some, regrouping may be seen as a compromise between the two systems. Regrouping involves allocating students to classes based on achievement levels for one or more learning area. The practice of regrouping is common in secondary education, and is practised by increasing numbers of primary schools for one or more subject areas, predominantly mathematics and/or literacy.

This study examines the practice of regrouping students between-classes based on achievement for the teaching and learning of literacy and mathematics in NSW primary schools.

Significance of the study

An increase in the use of the regrouping strategy in the United Kingdom has been noted in the last 10 years by a number of researchers (for example Davies, Hallam & Ireson, 2003; Hallam, et al., 2004a, 2004b; Hallam, Ireson, Lister, Andon Chaudhury & Davies, 2003), who claim that an increased focus on student assessment and attainment is the driving force, with added pressure in the form of various governmental directives. The researchers named above have, with other colleagues, undertaken a number of studies, both small and large, to determine the effects of the practice in primary and secondary schools. The research generated by these studies relates, in most cases, to effects on teacher attitudes and practices, as well as affective outcomes for students resulting from the regrouping strategy. Given that the research on achievement grouping over a large number of years has not provided convincing arguments in favour of the practice (Ireson & Hallam, 1999; Jackson, 1964; Slavin, 1987), why are primary schools currently employing the regrouping strategy?

To date there have been no studies identified in Australia which either support the implementation of regrouped classes in primary schools or which investigate the effects of such a practice. Although one cannot place too much weight on a small study such as the one described here, should this study produce positive results for student academic achievement without detriment to student attitudes towards schooling, then consideration of this practice by more primary schools would be warranted. Should benefits for students of any kind (but particularly academic achievement) not be shown to result from the practice, school principals currently implementing the regrouping of students might consider other ways of improving student outcomes. In either case, this study will provide a comprehensive, if small scale, investigation into the practice of regrouping in the context of NSW primary schools, an area which has not been studied previously.

Specific Purposes of the Study

This study is designed to investigate the reasons for utilising the practice as well as the effects of regrouping class structures on student academic achievement, student attitudes towards school, and teacher attitudes and classroom practices. It will also seek to determine whether there are differing effects for girls or boys, or for students in low, middle or high achievement groups. In light of these considerations, the effectiveness of the strategy will be evaluated.

The question for schools is whether the necessary investment of time and energy to organise these groups, including allocation of individual students to groups, is worthwhile - whether students do, in fact, benefit academically or otherwise from the strategy. Any benefits must then be weighed with any effects the strategy has on other facets of school processes, such as organisation of students into classes, socialisation of students, teaching practices, classroom environments and equity in education, in order to make a balanced decision.

The study therefore seeks to answer the following questions:
- Why do some schools choose to regroup?
- What are the effects of regrouped literacy and numeracy classes on student academic achievement and attitudes towards school?

- Are the effects different for male and female students?
- Are the effects different for students in low, middle or high achievement groups?
- What impact does this grouping structure have on teacher attitudes and classroom practices?

The answers to these questions will lead to ultimately to the answer of the broader question:

- Overall, is the use of the regrouping strategy justified by its outcomes for students and/or teachers?

Outline of the Thesis

Before attempting to answer these questions, a review of the relevant literature will be provided in Chapter 2. The processes and options relating to the organisation of students and teachers into classes will be outlined, followed by a discussion of the influence of state and national testing on school processes. The literature on grouping for learning will then be synthesised, and an history of ability/achievement grouping presented. Achievement grouping will be further discussed in terms of its impact on academic achievement, student attitudes towards school and differences in effects by gender. Subsequently, teacher attitudes in relation to the strategy will be reported, followed by any resulting impact on teaching practices. The literature on class size and student outcomes will then be reviewed, as regrouping is often accompanied by a manipulation of group numbers. Classroom climate is also examined as relationships among teachers and students are likely to be affected by manipulations of the class structure.

The research method for the study is outlined in Chapter 3, with detail of the mixed method approach adopted in the study provided. The research design involves comparing data from two groups of schools (four schools in each group): one group which practices regrouping for literacy and numeracy with Stage 3 (Years 5 and 6) students, and one group which operates mixed achievement classes. The process of selecting schools for participation in the study, as well as relevant background information about those schools is presented. Details about the participants (principals, Stage 3 teachers and Stage 3 students) and their participation are outlined. The various

instruments used for collecting data are described: interview foci, Basic Skills Test growth results, Quality of School Life survey and classroom observation schedule. Methods of analysing the qualitative and quantitative data are also outlined.

Results of the study are presented in Chapter 4, where data analysis is detailed by the following research themes: decisions and practices regarding the organisation of classes, the impact of regrouping on academic outcomes, effects on student attitudes towards school, effects on teachers' attitudes and classroom practices. Within the sections on student academic and affective outcomes, gender and group level differences are also outlined. Finally, results from the study which were not directly targeted by the research are noted.

In Chapter 5 the results are discussed in relation to both the existing literature and the initial research questions. Implications for practice are presented, and the limitations of the study are noted. Finally, conclusions and recommendations based on the discussion of the study's results are presented in terms of school organisational practices and suggested further research directions.

CHAPTER 2

REGROUPING IN HISTORY AND PRACTICE

Overview

Over the last few years a significant number of primary schools in the Newcastle area (and indeed many areas in New South Wales) have been regrouping students for classes in reading/literacy and/or mathematics. The reconfigured groups are achievement-based, often involving all students of a Stage according to NSW Board of Studies syllabus documents such as the English K-6 Syllabus (NSW Board of Studies, 1997). For example, all students in years 5 and 6 (Stage 3) would be ranked and assigned to homogeneous classes for the designated Key Learning Area (KLA). It should be noted that implementation of this strategy is only possible in medium to large schools where a number of class groups are available to be recombined (Lee & Croll, 1995), as small schools rarely have the flexibility of resources needed to facilitate this type of class organisation (Hallam, et al., 2003). Whilst forms of achievement grouping are evident in most western educational systems, there are those which do not value it to the same extent. Some education systems practise large-scale, whole-class teaching with an emphasis on student effort for those not achieving as well as others (Ireson & Hallam, 1999). Achievement grouping is generally less common in Australian tertiary educational institutions, but there are instances of this overseas (Ansalone, 2002). Why are primary schools (particularly those in Australia) currently organising classes in this way, and what are the effects for staff and students? Expected effects would be in the areas of academic achievement, teacher and pupil satisfaction and sociological relationships (both teacher/students and student/student).

There is a paucity of literature directly related to this particular form of class arrangement in primary schools. Whilst no literature was found regarding the practice in Australian primary schools, some research has been conducted in British primary schools (where the practice is known as "setting") and elementary schools in the United States (US) (where the term "tracking" has been used for streaming and/or setting, and "regrouping" has also been used), and research in secondary schools has studied similar situations. In Britain, it is widely believed by the public and the government that setting

is beneficial for student achievement (Boaler, Wiliam & Brown, 2000). This chapter will examine literature regarding various areas of research relating to the use and effects of the organisational method, outlined above, which will be referred to in the current research as "regrouping". A variety of areas are included in the studies reported on, including the organisation of classes, grouping for learning, class sizes, teaching practices, student attitudes towards school and classroom environment. It is important to consider both cognitive and affective outcomes, as school effectiveness cannot be measured by academic criteria alone (Reynolds & Teddlie, 1999 cited in Gadeyne, Ghesquiere & Onghena, 2006, p. 64) and effects on these two domains in primary schools have been found to be related weakly if at all (Knuver & Brandsma, 1993).

<div align="center">Organisation of Classes</div>

General Considerations

Historically, primary school students have been organised into classes which remain unchanged for the period of the school year in order to best meet students' needs in terms of security, familiarity and cohesion (Burns & Mason, 1998). Organising the school population into classes is the responsibility of school principals. Considerations include pupil and teacher numbers and characteristics, plus available resources (Burns & Mason, 1995, 1998; Dreeben & Barr, 1988; Greenwald, Hedges & Laine, 1996). Students are grouped in ways seen as conducive to instruction (Dreeben & Barr, 1988), which is important given that class composition has been found to affect various aspects of students' learning (Hallinan, 1992; Raudenbusch & Willms, 1995 cited in Burns & Mason, 1998, p. 741). Small schools tend to be more constrained in the organisational options available to them (Lee & Croll, 1995) due to having fewer pupils, teachers, teaching spaces and other resources.

Burns and Mason (1995) stated that almost no literature existed on principals' procedures for the allocation of teachers and students, yet there was substantial literature on the effects of such allocation. Through interviews with 90 principals in a small area of the US, they determined that primary classes were predominantly organised along age lines, using heterogeneous achievement (often termed "ability") grouping and taking into consideration such factors as gender, parental requests, special

education needs, and social skills. Schools may also try to keep disruptive students separated (Davies, Hallam & Ireson, 2003). It was stated by Whitburn (2001) that students in England were, in most cases, also firstly grouped by age, and the same could be said of Australian schools. The development of students' social skills was seen as important in the construction of stable, mixed-achievement classes by teachers in some UK primary schools, particularly for younger students (Davies, et al., 2003), and these schools also considered students' "friendships, gender, behaviour and the establishment of positive working relationships" (p. 50).

Where a school has more than one mixed-achievement class of the same age or grade, they are sometimes termed "parallel" classes. Dreeben and Barr (1988) found that it can be important to distribute students of all achievement levels equally among such classes for teachers and pupils alike, as class composition can affect groupwork, instruction and learning. In their study of US first grade students, it was determined that the level of "difficulty" (1988, p. 129) of a class, as defined by the proportion of learning-ready students, impacted differentially on student achievement. Dreeben and Barr categorised classes as easy, average or difficult, and students as low, low-average, average, high-average or high. They found that low, low-average and high-average groups all learned more in average classes than in difficult ones, whilst average groups learned more in difficult classes. Comparisons among high groups were not viable. The researchers considered that the result pertaining to average groups, whilst not statistically reliable, may have been a construct of the average groups' perceived higher ranking in the difficult classes. That is, the students saw themselves as better learners than most in their classes, and performed accordingly. This has implications for student and teacher expectations, which will be discussed later.

Similar studies have been completed in other contexts. Beckerman and Good (1981) studied 103 third and fourth grade classes in the US, and found that both low and high-achieving students attained more in classes with fewer low-achieving students. Possible reasons stated for the findings were students modelling the behaviour of the majority group in the class, faster pace (and therefore amount) of work covered in classes with a higher average achievement level, or teachers having more time to spend assisting low-achieving students due to fewer management demands in more "favourable" classes (Beckerman & Good, 1981, p. 324). A study of US junior high school classes likewise

found that both high and low-achieving students attained more in classes with higher average achievement levels at the beginning of the school year (Veldman & Sanford, 1984). Whatever the cause, these effects are likely to be stronger in homogenous achievement classes, which will be discussed later.

The heterogeneity principle was found to be complicated by student numbers which may not fit neatly within acceptable class size guidelines. When this occurred, composite (or combination) classes were introduced. Composite classes usually contain students from two adjacent grades, such as a majority of Year 1 students with a smaller number of Year 2 students. In a study comparing the allocation of teachers and pupils to regular classes as opposed to composite classes, Burns and Mason (1998, 2002) determined that principals often selected students from the younger group seen as independent workers or higher achievers for inclusion in composite classes in order to reduce the ability range within the classroom, thereby making the class more attractive for the teacher. Such intentional modification of class composition has ramifications not only for the composite class, but also for the remaining single-grade class/es, as it can affect achievement variation among classes (Burns & Mason, 2002) as well as social dynamics and resource allocation. In turn, resources are "systematically related to student achievement" (Greenwald, et al., 1996, p. 384). Greenwald et al. completed a meta-analysis of 60 research studies based on the interaction between school expenditure and pupil attainment and found correlation between the two. Whilst findings from US based studies such as this cannot always be generalised to other contexts, as schools there are financed and run by district, and therefore susceptible to effects of size and parental economic status (Beckerman & Good, 1981), the findings are still worthy of consideration. Burns and Mason (1998) found that policy was a further constraint on principals' organisation of classes.

Designated Achievement Grouping

There is no doubt that the task of organising pupils and teachers into classes can be time consuming, but it is likely to be more so in the cases of schools which institute achievement grouping between classes, especially if it is to be effectively facilitated and monitored (Davies, et al., 2003). This said, Wright, Horn and Sanders (1997) supported Slavin's (1990) earlier suggestion that, in regard to achievement grouping, school

organisation was likely to have only a minor impact on student attainment unless teaching practices (to be discussed later in this chapter) were changed appropriately. Rowe (2003), however, claimed that "…. administrative and social organisational features of schools are important factors in influencing both teachers and students" (p. 7) but that research has struggled in demonstrating the links between such organisation and student outcomes. He posited that this difficulty may be due to the fact that such effects are indirect, with teachers acting as conduits.

Decisions to implement between-class achievement grouping may stem from educational concerns, political reasons or be influenced by market demands and parental pressures (Boaler, et al., 2000; Charlton, Mills, Martino & Beckett, 2007; Wiliam & Bartholomew, 2004). Not surprisingly, there is a perception that the parents who expect their children to be placed in the top group are generally the ones to support this strategy (Charlton, et al., 2007; Duru-Bellat & Mingat, 1998; Wiliam & Bartholomew, 2004). When school authorities do make a decision to implement between-class achievement grouping, a process for determining allocation of students to those groups must be agreed upon. Schools may use results from standardised testing, school or class specific assessment, anecdotal records from teachers, or any combination of these in making their decisions, but no such process is flawless. Jackson's (1964) pivotal report on streaming in the UK, which will be discussed in more detail later in this chapter, noted several problems regarding allocation of students to streamed classes. He found that students from disadvantaged backgrounds were over-represented in low streams, and this problem has remained in relation to achievement grouping, whether it be organised between or within-class (Haskins, Walden & Ramey, 1983; Wiliam & Bartholomew, 2004). Also disproportionately represented in low streams in Jackson's (1964) study were children who were younger on entering school, which is not surprising given the difference in cognitive development that six or nine months can make at age five. An issue arising from this is that, given the lack of movement noted by Jackson between streams during enrolment at a particular school, and the difference in curriculum covered by the different streams, a young or disadvantaged child could be labelled as a "C level" student for their entire school life. Jackson (1964) found that over 30 per cent of primary schools employing streamed classes (mostly for students from the age of seven) used no objective test when determining student allocation.

How much has the situation changed since then? After examining the allocation process for students to setted mathematics classes in the first year of a UK middle school (students aged around 9 years), Troman (1988) determined that the majority of students were allocated without query. For these students, results on a mathematics test completed after four weeks of the school year were consistent with teachers' perceptions. In cases where teacher perceptions and test results differed, Troman found that teachers drew on knowledge derived from classroom interactions. This included knowledge of the students' siblings' achievement, pace of task completion, matching students to undefined set or level characteristics and even physical appearance. Such attributes were seen to override attainment data, leading Troman to describe the selection process as "desultory, premature, covert, hasty, inequitable and, for the majority of pupils, final" (1988, p. 420). More recently, literature reviews (such as Sukhnandan & Lee, 1998 in Davies, et al., 2003, p. 46) have found that objective measures were still lacking in the grouping processes of some schools, and an Ofsted report in the UK (1998, cited in Davies, et al., 2003, p. 46) stated that few schools adequately documented student allocation criteria for setted classes. Setted mathematics classes were found to contain students with overlapping standardised test scores even between the high and low groups, with students allocated to groups almost arbitrarily according to teacher perceptions (MacIntyre & Ireson, 2000 cited in Davies, et al., 2003, p. 47). Students from non-English speaking backgrounds have also been found to be over-represented in low-achieving groups (Davies, et al., 2003).

Interviews were conducted by Davies et al. (2003) with principals, teachers, parent representatives and students from six UK primary schools employing a variety of grouping practices. Those schools with streamed or setted classes relied on a range of tests, some using commercially produced standardised tests, while other schools designed their own. These covered areas of mathematics, reading, comprehension and cognitive skills. Some support was also given for the inclusion of information from student reports and parental input. Some parents exerted pressure on schools when unhappy with their children's group placement, and occasionally placements have been changed as a result. Many interviewees in the study by Davies et al. (2003) stated that behaviour could influence a student's group placement. Some schools noted taking care that students with behaviour problems were not concentrated in groups, and for one school this involved placing a low-achieving student into the high achievement group,

as that teacher was considered best able to manage his behaviour. Behavioural and motivational issues have also been found to cause group placement to be manipulated on the basis of gender (Charlton, et al., 2007), and this will be discussed in detail in a later section.

Davies et al. (2003) found that movement between groups on the basis of progress was seen as important by the schools, but was found by some to be difficult to implement. Difficulties encountered related to availability of space in the correct group, continuity of teaching programs, disruption to friendships, group dynamics and a concern for the self-esteem of students who may be moved to lower groups. Accordingly, Davies et al. (2003) found that most movement between groups occurred at the beginning of the year, or beginning or end of term. No schools in their study monitored between-group movement systematically. A similar study with lower secondary classes in 45 UK schools by Ireson, Clark and Hallam (2002) found similar results. Information provided by school executive staff showed that student allocation to sets was determined by a variety of factors, leading to groups containing a wide range of attainment which they suggested did not represent homogeneity, and movement between groups was mostly infrequent due to constraints relating to group size and curriculum considerations. Gamoran (1984 cited in Gamoran, 1986, p. 195) found that a student's previous group level influenced subsequent placement decisions, and this may happen regardless of the student's attainment.

School timetables and resources also need to be structured to accommodate between-class grouping (Ireson, et al., 2002), especially when those groups change for different purposes or subject areas, as is the case with regrouping. It is also the case that teaching time may be lost under this practice, as students move from one location within the school to another.

The Influence of State and National Testing

One systemic factor which may have influenced the implementation of regrouping in New South Wales (NSW) schools is the Basic Skills testing (BST) system in the areas of English (including reading), writing and mathematics. These tests were introduced in 1989 and have been undertaken annually by students of all government and many other

primary schools in NSW in Years 3 and 5. The results of such tests provide a focus for the concerns of parents and all those interested in the standard of education systems, and are regularly featured in the media. In 2008 the BST is being replaced by a nationwide testing program, the National Assessment Program for Literacy and Numeracy, which highlights the importance placed on comparison of student results. Similar emphases on performance in the United Kingdom (UK) have also been named as contributing to the resurgence of achievement grouping (Hallam, et al., 2003; Hallam, et al., 2004a, 2004b).

Setting has been encouraged in recent years in UK primary schools by reports published by the UK Department for Education (Hallam, et al., 2004a; Wiliam & Bartholomew, 2004). It has been seen as a means to improve student achievement, with pressure brought to bear on teachers through inspections and the publication of students' national test results (McNess, Broadfoot & Osborn, 2003). In examining the impact of government policies on secondary teachers and students in three countries, McNess et al. (2003) noted that the " 'performance' culture being promoted by current policy-making" (p. 256) was in contradiction with the contemporary focus on lifelong learning through the development of "resilient and flexible learners" (p. 256) which other UK government papers have also promoted. They suggested that the emphasis on achievement reduced the capacity for teachers to employ their own expertise and restricted teacher creativity. Similar results came from the PACE (Primary Assessment, Curriculum and Experience) study which included interviews with 88 infants teachers and 48 six year old students in the UK. Teachers interviewed claimed that increased demands in the areas of curriculum and assessment had reduced the capacity for spontaneity, flexibility and creativity in the classroom (Pollard, Osborn, Croll, Abbott & Broadfoot, 1991). The trend toward performance has continued, encouraged by various policy measures, according to Troman (2008).

Grouping for learning

Grouping Structures

Many reviews of the literature on ability grouping have been completed in the last twenty years (Gutierrez & Slavin, 1992; Ireson & Hallam, 1999; Lloyd, 1999; Lou,

Abrami & Spence, 2000; Lou, Abrami, Spence, Poulsen, Chambers & D'Apollonia, 1996; Slavin, 1987, 1990; Veenman, 1995), all varying in either focus or method. Lloyd (1999), in a discussion of multi-age schooling and its suitability for gifted and talented students described different grouping arrangements as included in the various studies. These include composite classes (as discussed above), multi-grade classes (similar to composite classes but containing more than two age groups), multi-age classes (achievement, rather than age-based), non-graded classes (also developmentally organised), family groups, open education, horizontal groups (chronological age) and vertical groups (more applicable in high schools). Kulik and Kulik (1992) have used other terms, such as multilevel classes, cross-grade classes, enriched and accelerated classes. It is neither possible nor necessary to examine all grouping types in detail here. Of interest in this discussion are any classes (either within or across grade) that are formed deliberately according to student achievement levels. In 1999, Lloyd stated that in Australia very little had been published on the topic. That remains the case, and so we turn to research from overseas. Even there, Burns and Mason (1998) bemoaned the lack of recent research on between-class ability grouping in the primary school equivalent, but several relevant studies have been published in the current decade (including Boaler, et al., 2000; Davies, et al., 2003; Hallam & Ireson, 2003, 2005, 2006, 2007; Hallam, Ireson & Davies, 2004a, 2004b; Hallam, et al., 2003; Ireson & Hallam, 2005).

One difficulty in reviewing the literature on the grouping of students is the variance in definition used. For example, Lloyd (1999) included regrouped classes in her review of multi-age classes, yet Veenman (1995) stated that multi-age classes typically remain with the same teacher for a number of years. What Veenman described is not a common practice in Australia, except in the case of small rural schools, where there are few options. Achievement grouping can be divided into that which occurs between-classes and that which occurs within-classes (relating to small groups). Whilst Lou et al.'s (1996) meta-analysis looked solely at within-class grouping, Slavin (1987) included research on both types in his "best evidence" synthesis, and Kulik and Kulik's (1982) meta-analysis covered only between-class grouping. The results of these studies, and others, are outlined in following paragraphs. Both types of grouping are examined here as there may be facets of both types which are relevant in this study. Most major studies about this research area are relatively old (for example Jackson, 1964: Kulik &

Kulik, 1987; Slavin, 1987) and the meta-analytical studies incorporate studies going back even further. Recent research in the area that relates specifically to primary schools has had a focus on affective outcomes, so that studies conducted in secondary school contexts must be reviewed for recent findings related to academic outcomes.

History of Ability/Achievement Grouping

Regrouping for specific curriculum areas is a form of ability or achievement grouping, a topic which, according to Slavin (1987) has been the focus of copious amounts of research, beginning in the 1920s. The practice of grouping students by achievement can be traced back to the 1800s (Otto, 1950 cited in Kulik & Kulik, 1982, p. 415), and became a popular way of organising classes (commonly termed streaming or tracking) in the 1920s, after standardised tests became available (Burns & Mason, 1998; Slavin, 1987). Using this practice, students were allocated to classes based on a determination of their perceived overall academic ability. As noted in Chapter 1, some of this early testing claimed to test a student's potential to achieve, hence use of the term "ability". Such tests lost credibility in the ensuing years, and a more accurate term for the practice now is "achievement grouping", since it is the students' level of attainment which is considered prior to group allocation. A significant body of work in the 1960s, including a research survey of 660 schools in England by Jackson (1964), discredited the practice of streaming on the grounds that it produced limited advantages for very limited groups of students, while simultaneously hindering the academic and social advancement of the vast majority. Other specific problems shown were: inaccurate methods of allocating students to streams (described earlier), inequitable allocation of teachers to groups (with inexperienced teachers often being allocated to low achievement classes), lack of movement between streams, the tendency of teachers to underestimate the potential of students in the lower groups and the fact that students have different ability levels in different subject areas. Negative effects of streaming were found by Jackson to be greatest for students from disadvantaged backgrounds, with the system found to reflect and reinforce a class hierarchy.

Despite its age, Jackson's research is seminal in the field, and it is notable that recent studies of regrouped or setted classes have shown that the problems he documented relating to inappropriate allocation of students to groups (Wiliam & Bartholomew,

2004) and lack of movement between groups have remained (Hallam & Ireson, 2006, 2007; MacIntyre & Ireson, 2002). Of the 660 schools included in Jackson's (1964) study, 74 per cent organised students in ability groups by age seven, and most did not move between groups whist remaining at the same school. This is problematic, given the general consensus that the pace of intellectual development varies greatly between individuals, particularly for young children (Churton, Cranston-Gringas, & Blair, 1998).

Claims of discrimination saw the end of widespread streaming in the following years, particularly in UK primary schools, though it was (and is) still used in many high schools, most often in the form of setting (streaming separately for each subject). However, Kulik and Kulik (1982) stated that thousands of schools in the US maintained streamed classes in the 1980s. Oakes (1985) suggested that its continued use in the US was, in some areas, a way of maintaining racial segregation. More recently, Ansalone and Biafora (2004) claimed that around 75 per cent of US school districts were using some form of tracking or achievement grouping. In the United Kingdom (UK), a survey of 804 primary, junior and infant schools in the late 1990s found few cases of streaming, with the highest incidence of setting being for mathematics in Year 6, for 24 per cent of classes (Hallam, et al., 2003). Government reports in the UK related to the teaching of literacy and numeracy have seen a resurgence of regrouping (or setting) in primary schools in recent years (Hallam, et al., 2004b; Wiliam & Bartholomew, 2004) with the expectation that it would help raise standards. Whitburn (2001) cited the introduction of the National Numeracy Strategy in 1999 as affecting the implementation of mathematics lessons. According to Whitburn (2001), its emphasis on whole-class teaching caused teachers who had previously used within-class grouping strategies as a means of differentiating mathematics instruction to organise setted mathematics classes. Smith, Hardman, Wall and Mroz (2004) noted that an increased focus on students' levels of attainment in UK educational discourse during the 1990s caused schools to consider new strategies to achieve growth in this area.

To some extent, the practice of achievement grouping appears to have come full circle. Research in the first half of the twentieth century tended to focus on ability, then on the achievement-related effects of the practice, followed by an emphasis on equality of opportunity, student self-concept and motivation in the latter half (Kulik & Kulik, 1982). The most recent literature, whilst still concerned with the affective influences of

achievement grouping, clearly illuminates a resurgence of focus on achievement, at least at the governmental level (Hallam, b., 2004; Whitburn, 2001; Wiliam & Bartholomew, 2004).

Academic Achievement

Much of the early research on achievement grouping was based on studies with small samples in a few classes or schools (Sorensen & Hallinan, 1986). The employment of meta-analysis has allowed the results of numerous separate studies to be combined, in an effort to obtain more conclusive results. Kulik and Kulik (1982) conducted one such meta-analysis of 56 studies related to between-class achievement grouping in secondary schools. No significant difference was found overall in relation to academic achievement, except in the case of extension programs for gifted and talented students, whilst programs designed specifically to meet the needs of struggling students had a negligible effect, with these students achieving comparably in mixed achievement classes (Kulik & Kulik, 1982). A meta-analysis they conducted later (Kulik & Kulik, 1992) incorporating a number of other meta-analytic studies (including Slavin, 1987 as outlined below) related to various school settings produced similar results: streamed and setted classes had no academic benefit, within-class and across-grade achievement grouping were slightly beneficial for attainment, while enriched and accelerated programs were moderately beneficial to attainment. They suggested that the success of some achievement grouping arrangements lay in the degree of differentiation of the subject matter to suit students' achievement levels (Kulik & Kulik, 1992). A study by Wright et al. (1997), seemingly by contrast, found that the highest achieving students made the least academic gains. However, this study did not specifically target tracked classes, and the results may have reflected the lack of curricular differentiation deemed important by Kulik and Kulik (1992), a topic to be discussed later in this chapter.

Often cited in the literature, Slavin's (1987) study is of particular relevance here due to its focus on studies at the equivalent of primary school level. This synthesis included only studies which used a control group and measured achievement using standardised tests. The overall finding was that homogeneous grouping provided no benefit overall compared to heterogeneous grouping. Criticisms of this review point to the age of many of the studies included as well as the exclusion of case-studies (Hallinan, 1990),

and a limit as to relevance here should be stated in that a number of curriculum areas are covered by the data. Further criticism of Slavin's (1987) analysis cited the fact that the effects of different instructional practices were not considered (Gamoran, 1987). Criticisms aside, within its limitations it remains one of the commonly cited studies related to achievement grouping.

Slavin's (1987) findings of most interest in this case lie in the results of a number of studies on regrouping. These studies cover research done in the 1960s into a type of regrouping known as the "Joplin Plan". Results of these studies demonstrated positive academic achievement "when done for only one or two subjects, with students remaining in heterogeneous classes most of the day" (Slavin, 1987, p. 293). In particular, the studies showed positive results for such regrouping in the areas of reading (Berkun, Swanson & Sawyer, 1966), mathematics (Provus, 1960) or both (Morris, 1969 cited in Slavin, 1987, p. 310). There may be some conflict here, however, as it would seem difficult to keep students in heterogeneous classes for most of the day when they are regrouped for two important curriculum areas. Indeed, anecdotal evidence suggests that in some cases students are currently in their "home" class for as little as an hour per day. Slavin (1987) listed a number of additional conditions for employment of Joplin-style regrouping, including accurate allocation of students to groups and frequent movement between groups. The age of the studies incorporated in Slavin's (1987) review must, indeed, be considered (Hallinan, 1990) as various aspects of schooling (including teaching practices) have changed since these studies were completed. Also, as pointed out by Hiebert (1987), effective literacy and numeracy programs result from a combination of "numerous factors, including effective teaching practices, instructional leadership from principals, and good materials" (p. 340).

How can the apparent success of regrouping for reading and mathematics in Joplin Plan studies be explained? Lou et al. (1996) suggested, in their meta-analysis of within-class grouping, that the spectrum of achievement level at which the teacher must aim instruction is reduced when homogeneous achievement grouping is employed. Kulik and Kulik (1992) determined that adjustment of course content was also the key to the success of programs for high-achieving students. Within-class achievement grouping is often used in mixed achievement primary classes when it is deemed useful to address

similar needs (MacIntyre & Ireson, 2002), and is most often used for instruction in reading and mathematics (Sorensen & Hallinan, 1986). It was further stated by Lou et al. (1996) that the adaptation of instruction methods and materials for small-group learning increased teaching effectiveness. Their quantitative study compared homogeneous to heterogeneous small-grouping, including only studies which used control groups, and controlled for teacher instruction. Low-achieving students were found to achieve more in heterogeneous groups and medium-achievement level students achieved more in homogeneous groups, whilst no significant difference was found for high-achieving students. An exception was that homogeneous achievement groups showed higher attainment in reading (Lou, et al., 1996). Reporting on reading groups in 45 Californian elementary schools, Sorensen and Hallinan (1986) suggested that within-class ability grouping provided fewer opportunities for learning than whole-class teaching (since the teacher has to divide their time among groups) but that those opportunities were used more effectively. Their study found that more learning occurred in small homogenous groups than in larger heterogeneous groups. They also determined that high achievement groups had increased learning opportunities through differences in material being presented. This led them to suggest that within-class achievement grouping may contribute to an "inequality of educational outcomes" (p. 540). The mechanics of this effect will be discussed in the section on teaching practices.

MacIntyre and Ireson's (2002) smaller mixed-method study on within-class grouping for UK mathematics instruction in primary schools found that achievement grouping may constrain students' learning through limiting the quality of work planned for and expected from lower achieving groups. In fact, Barr (1974) determined that a slower pace did not result in improved mastery for low-achieving first grade readers. This is a problem which may also apply to between-class achievement grouping. Some studies of between-class achievement grouping have also determined advantages for high-achieving students at the cost of disadvantages for their low-achieving counterparts (Dar & Resh, 1986; Venkatakrishnan & Wiliam, 2003).

Factors found to moderate the effects of within-class grouping included instructional treatment, teacher training, group size, subject area and grade level (Lou, et al., 1996). Instructional treatment and group size will be considered later in this chapter. In their

study of within-class achievement grouping for reading in kindergarten, McCoach, O'Connell and Levitt (2006) stated that within-class achievement grouping has the advantage of being flexible, with teachers able to easily reassign students to groups for varied areas of skill or readiness at any time in the school year. Also, because they know their students well, these teachers are able to effectively determine individuals' needs and allocate them to appropriate groups (Haskins, et al., 1983; McCoach, et al., 2006), whilst student allocation in between-class achievement grouping has remained problematic, as mentioned earlier. However, research indicates that such benefits of within-class grouping are not always facilitated, with overlaps in achievement and little movement between groups being commonplace (Hallam, et al., 2004b; MacIntyre & Ireson, 2002) due to a shortage of time and "social considerations" (MacIntyre & Ireson, 2002, p. 260).

Recent criticism of between-class achievement grouping has arisen from research by Wiliam and Bartholomew (2004). In a four year study involving 955 British secondary students in mathematics classes, they found that setting produced gains in achievement for high-achieving students, but that these were " at the expense of losses for lower attaining students" (p. 290), creating an increased spread of results in mathematics attainment. They suggested that the set to which a student was allocated made far more difference to the achievement that student would make than which school a student attended. The research found that teachers treated different levels of students differently, having low expectations of low groups, and (often *too*) high expectations of high groups, presenting tasks that reflected these limiting attitudes. Another study in UK secondary schools found improved achievement in mathematics for high-achieving students, but no differences for English or science (Ireson, Hallam, Hack, Clark & Plewis, 2002). Achievement for similar students was affected by placement in different sets, according to Ireson, Hallam et al. (2002). A study in Belgian secondary schools found similar effects on mathematics achievement, with achievement grouping again seen to benefit high-achieving students, to the detriment of low-achieving students (Opdenakker & Van Damme, 2001). Results supporting those of Wiliam and Bartholomew (2004) were also found in Israeli junior high school mathematics classes by Linchevski and Kutscher (1998). Researching the TAP (Together and Apart) project, with a focus on mixed achievement classes catering for the range of students through differentiation and cooperative learning, the researchers concluded that the gap

created between low and high-achieving students through tracking stemmed from a loss in achievement by students in the lower groups. Their study showed significant achievement gains for weak and average students in mixed achievement mathematics classes when compared with similar students in setted classes. It must be noted that the TAP project provided weekly workshops to support teachers in the development of relevant teaching strategies and tools. Wiliam and Bartholomew (2004) described the practice of setting as having many of the problems encountered in streaming, such as inequitable allocation of students and teachers to groups. Allocation of students to groups has been seen to affect students' long-term achievement levels, owing to groups being provided with different opportunities for academic progression (MacIntyre & Ireson, 2002).

Similar results were found in research conducted by Boaler et al. (2000) with secondary UK mathematics students. Data were collected through lesson observations, questionnaires and interviews involving 943 students in six schools, where the schools utilized setted classes to varying degrees. Their study found that a change from mixed achievement to setted classes resulted in negative effects on students' learning of, and attitudes towards, mathematics. They also found problems in the allocation of students to groups, and the fact that students differ in ability across a range of mathematical areas. They pointed out that many of the problems found with setting are not inherent, but are hard to avoid, and went on to note that, in a country where setting is commonplace, primary and secondary student achievement is, by international standards, modest. In agreement with this, Burstein (1993) stated that setting lacked efficiency and impartiality, and that countries which used the most setting had the lowest levels of attainment. Boaler et al. (2000) went further, claiming that "between-class ability-grouping …. could be the single most important cause of the low levels of achievement in mathematics in the UK" (p. 646). When schools at both primary and secondary levels implement achievement grouping, there are likely to be cumulative effects (Ireson, Clark, et al., 2002). Achievement grouping has been said to maximize differences among students (Opdenakker & Van Damme, 2001), leading to segregation and low teacher expectations (Slavin, 1996) and producing inequality for children's life chances (Thrupp, 1999). Researchers in the US have stated that whilst policymakers in the US have increasingly opposed tracking due to the growing body of evidence that it is educationally ineffectual and discriminative, many schools have maintained the

practice due to community pressures (Welner & Oakes, 1996). They suggest that in such areas, litigation based on anti-discrimination has been successful and may be worth pursuing. Despite this, it remains that setting is commonly seen by many as a way to improve student academic outcomes (Hallam, et al., 2003).

Student Attitudes

Given society's emphasis on academic attainment, it is not surprising that affective outcomes were often ignored prior to recent decades (Leonard, Bourke & Schofield, 2004). In recent years, research about achievement grouping has expanded its long-standing focus on academic achievement to consider other effects, including those relating to student attitudes, although some data from earlier studies were included in Kulik and Kulik's (1982) meta-analysis. They determined that attitudes towards subject matter were positively affected by achievement grouping, but attitudes towards school in general were not significantly affected. This finding was contrasted by results from the study by Boaler et al. (2000), where secondary students' attitudes towards mathematics were found to be negatively affected by the introduction of setting. The majority of students in setted classes "wanted either to return to mixed-ability teaching or to change sets," (Boaler, et al., 2000, p. 635). In their study, more students in mixed-ability than in setted classes felt that the work set for them was at an appropriate level of difficulty.

In contrast to these findings, Hallam and Ireson (2006) found that the majority of students preferred setting to mixed-ability classes. Through a questionnaire distributed to 5000 UK secondary students, they determined that student attitudes mirrored those of their teachers in that they believed setting allowed work of a suitable level to be delivered. Interestingly, in other papers these researchers wrote that substantial numbers of students wished to move to a different (mostly higher) set (Hallam & Ireson, 2007; Hallam, et al., 2004b). Charlton et al. (2007) found that few students interviewed would be happy to be in lower sets. Hallam et al. (2004b) suggested that most students were cognisant of the grouping organisations within their schools and also provided justifications for the structures which mirrored those coming from their teachers. In this more recent study, interviews with students from six UK primary schools utilising different grouping structures found that attitudes towards school were not directly

linked to the type of achievement grouping used (Hallam, et al., 2004b), and this finding was supported in a study of 45 secondary schools (Ireson & Hallam, 2005). The most common reason cited by the students for employing achievement grouping was to match work to student capabilities, with 27 per cent of students perceiving this to be advantageous. Other perceived advantages of setting were working with different students, better teaching, variety of teachers and harder work. Few responses were received as to advantages related to streaming. National testing was claimed by some as reason for grouping decisions (Hallam et al., 2004b), as was behaviour management.

There is some evidence that student attitudes toward the various grouping mechanisms are affected by the achievement level group to which they have been allocated. Even young students allocated to achievement groups given innocuous names to disguise the levelling are aware of the hierarchy and their place within it (Filby & Barnett, 1982). Some consider that such arrangements affect student motivation and expectations (Gamoran, 1986), and whilst that is questionable for very young students, certainly those in the upper primary years may feel the impact of such institutional constructs. Ireson and Hallam (2005) found "a sharp decline in liking for school" (p. 308) in lower achieving students, and that this was more pronounced in schools with the highest levels of setting. Hallam and Ireson (2006) found that students in low groups tended to favour mixed-ability classes. Secondary students in high achievement groups felt that teachers were supportive more than their middle and low achievement group counterparts (Ireson & Hallam, 2005).

Interestingly, despite students from both mixed achievement and setted schools stating an overall preference for setting, Hallam and Ireson (2006) found that "the children who preferred mixed-ability teaching liked school better and had higher levels of self-concept and self-esteem" (p. 591). The effect of achievement grouping on self concept is seen to be important as low self-concept may precede a decline in achievement (Meece, Parsons, Kaczala, Goff & Futterman, 1982). Although Kulik and Kulik's (1982) meta-analysis found the effect of achievement grouping on self-esteem to be trivial, most studies conducted in western countries have tended to find achievement-based classes linked to lower self-concept for lower achieving students (Liu, Wang & Parkins, 2005). Whilst teasing of high and low-achieving students may occur in any school setting, Hallam et al. (2004b) found it to be least prevalent in schools which

employed predominantly mixed achievement grouping. The level of teasing was found to correlate with the degree of structured achievement grouping, but school ethos was found to mediate this.

A study of secondary students in Singapore determined that streaming had a negative impact for students allocated to low groups, but that this effect lessened over time, possibly as students began to focus more on within-group comparison (Liu, et al., 2005), and similar effects have been suspected by other researchers (Gamoran, 1986; MacIntyre & Ireson, 2002) when examining within-class grouping of primary students. Lou et al. (1996) also found more positive attitudes towards the subject matter as well as higher self-concept in students from classes using within-class grouping. MacIntyre and Ireson (2002) suggested that differences in the organisation of within-class grouping may produce variations in the effects of these groups on self-concepts. Results from studies on within-class grouping may not be transferable to regrouping schools where students move between homogeneous and heterogeneous groups throughout the day.

Gender Differences

Much has been written on gender difference in relation to education generally, with boys' education being a focus in recent years, both in Australia and overseas. Differences have been found in the areas of overall academic achievement, engagement, behavioural problems, auditory processing problems, school-leaving age, and enjoyment of school (Rowe, 2003). In most cases the overall concern has been that boys fare less well in our education systems. In fact, the issue of boys' education has received so much attention in recent years that some researchers suggest that the interests of girls have suffered as a result (Charlton, et al., 2007). There has been concern about general low performance by boys at school (Davies & Brember, 1999), with literacy of particular concern (Rowan, Knobel, Bigum & Lankshear, 2002). Davies and Brember (1999), in a longitudinal study involving 1488 students from five primary schools in one area of the UK, found that boys' test results in reading and mathematics tended to be towards the extremes of the range of results, whilst girls' scores tended to be in the middle range. This would impact on group placement in schools implementing regrouping. Davies and Brember (1999) noted that differences in

achievement by gender may stem from many factors related to their experiences, the tasks themselves or assessment methods. Girls generally express more favourable opinions about schools than do boys (Ainley & Bourke, 1992; Ireson & Hallam, 2005), but higher self-esteem has been found for boys (Davies & Brember, 1999). Analysis of data from the Scottish School Leavers Survey with over 3000 respondents found that girls took school more seriously than did boys, whilst peer pressure acted to discourage boys' academic success (Tinklin, 2003). A similar study found that low attainment for girls was associated with negative attitudes towards teachers and large family size, according to Biggart (2000, cited in Tinklin, 2003, p. 309). Such differences may stem from different socialisation processes experienced by girls and boys which influence how and what they learn (Murphy & Elwood, 1998). Factors influencing gender differences include "teaching and learning processes, curricular content and assessment methods, teacher-pupil interactions, parental attitudes and post-school opportunities" (Tinklin, Croxford, Ducklin & Frame, 2001 cited in Tinklin, 2003, p. 322). These differences make it important to consider the possibility of different grouping structures impacting differently, dependant on gender.

Some differences by gender have been identified in previous research as related to achievement grouping. The study by Hallam and Ireson (2006) found that girls were more strongly in favour of setting than boys. Other researchers have found that girls were disadvantaged by being placed in the top group, where teachers proceeded at too fast a pace, with little concern for deep understanding (Boaler, 1997b; Wiliam & Bartholomew, 2004). Self-concept in mathematics was found to decline sooner for girls than boys after elementary school, preceding a decline in achievement (Meece, et al., 1982), which may relate to the higher rates of achievement grouping in secondary schools. Hallam and Ireson (2007) determined that boys wanted to change set more often than girls (perhaps due to the higher proportion of boys in lower groups), girls more often wanted to move down a set, and boys were more conscious of status in relation to achievement groups. Wiliam and Bartholomew (2004) found that the employment of setted secondary mathematics classes contributed to a lack of progress for low-achieving boys.

Research centring on strategies employed by an urban Australian high school in an effort to address boys' issues found that the allocation of girls to achievement-based

classes was manipulated in response to "market and parental pressures" (Charlton, et al., 2007, p. 460). Data were gathered from interviews with executive staff, teachers, and pupils from top and bottom sets in Year 8, staff meetings, and classroom observations to compile a case study. It was found that some girls were placed in lower sets than was indicated by their academic performance in order to avoid low-achieving classes consisting only of boys. Such classes were considered difficult to manage, and the presence of girls was expected to improve boys' behaviour and attainment. Likewise, some girls were removed from the highest class to make room for an equal number of boys, in an attempt to improve boys' self-esteem. In both cases, the allocation of students to groups was inaccurate (in terms of achievement) and inequitable for the girls.

That boys demonstrate less overall academic achievement than girls, led Rowe (1999 cited in Rowe, 2003, p. 12) to suggest that a school's performance may depend on the ratio of male to female enrolment in any cohort. Interestingly, different types of tests may produce different gender based performance. Davies and Brember (1999) found that girls outperformed boys in national tests, but not on standardised tests, despite the tests being similar in format. On the latter, results for reading were similar, but boys outperformed girls in mathematics. This difference in assessment performance has implications for the way achievement is measured and analysed in research.

Teacher Attitudes

A survey with responses from 804 UK primary schools by Hallam, Ireson and Davies (2004a) found that when determining grouping strategies school considerations included, among others, "raising attainment, the introduction of the National Literacy Strategy, facilitating ease of teaching" (p. 137). Although the paper does not document exactly who, within the schools, completed these surveys, it seems reasonable to assume that these responses generally reflected the views of teachers. In a study which collected data from over 1500 UK secondary teachers in 45 schools employing varying levels of setting, researchers investigated teachers' attitudes towards and beliefs about achievement grouping (Hallam & Ireson, 2003) as well as teaching practices in setted and mixed achievement classes (Hallam & Ireson, 2005). Teacher responses were found to be influenced by the amount of setting in their current school, school ethos,

length of time in mixed achievement schools, and qualification (Hallam & Ireson, 2003). Those with higher qualifications or more experience in mixed achievement schools had more positive attitudes towards that practice. Overall, teacher beliefs were found to be consistent with the results of research, with differences reflecting the situations in which the teachers worked; that is, those who worked in schools with high levels of setted classes expressed more positive views towards that practice (Hallam & Ireson, 2003). However, even in a survey of 246 head teachers in UK primary schools where little streaming occurred, well over a third of respondents claimed to see value in streaming for primary schooling, with the percentage higher in relation to secondary schooling (Lee & Croll, 1995). Of those supporting streaming, few believed it would benefit low-achieving students.

Through anonymous surveys with 124 elementary school teachers in lower New York state, tracking was almost unanimously seen as an effective classroom management strategy (Ansalone & Biafora, 2004). More than half the teachers surveyed agreed that high-achieving students benefit from working with similar peers, and over three quarters agreed that lower achieving students benefit from working with higher achieving peers. More than half agreed that tracking may limit future opportunities for some students, and 60 per cent believed that tracking impacted negatively on the self-concept of low-achieving students. These responses demonstrate an understanding, on the part of most teachers surveyed, of the complex issues involved in achievement grouping, and generally reflect research findings. A survey conducted with teachers of grades one to four in the US found that 41 per cent believed that achievement grouping produced improved learning in mathematics (Weiss, Matti & Smith, 1994 cited in Burrill, 1998, p. 586). Burrill suggested that such beliefs led to tracking and deprived many children of equal educational opportunities. Teachers involved in the TAP project outlined earlier did not initially believe that mathematics could successfully be taught in mixed achievement classes, but were happy with the end result (Linchevski & Kutscher, 1998). This is a significant finding, given that secondary teachers surveyed considered mathematics to be the subject least suitable for teaching in mixed achievement groupings (Hallam & Ireson, 2003).

There has been, and continues to be, strong agreement that teaching is easier in setted classes, as is classroom management (Ansalone & Biafora, 2004; Hallam & Ireson,

2003, 2005; Kulik & Kulik, 1982). This is relevant as teacher workload impacts on teacher-student relationships (Pollard, et al., 1991), and therefore on student self-esteem, as will be discussed later. Despite this, as setting increased, so did teacher reports of time spent dealing with the behaviour of lower achieving students and a view that groups of low-achieving students lacked positive role models (Hallam & Ireson, 2005). They also found that teachers felt effective mixed-achievement teaching was difficult to attain, but that such skills were of benefit to all students. Teachers felt that different teaching practices needed to be employed depending on students' achievement levels, with many feeling that achievement grouping (by class) facilitated better meeting of students' needs. Mathematics was seen as the KLA to benefit most from achievement-based classes (Hallam & Ireson, 2003). Teacher expectations of students differed according to the level of setting employed in their schools, with teachers of setted classes expecting a faster work rate from high-achieving students more than mixed achievement teachers did. There was overall agreement that, in addition to teacher skills, appropriate resources and support were needed for successful teaching in mixed achievement classes (Hallam & Ireson, 2005). It was found by Lee and Croll (1995) that primary teachers were generally open to the consideration of different approaches to school organisation.

Differential teacher attitudes towards students in levelled achievement groups may also impact on student academic outcomes, as teacher expectations have been shown to impact on students' learning opportunities (Rubie-Davies, Hattie & Hamilton, 2006). Rosenthal and Jacobson (1968) applied the concept of self-fulfilling prophecy based on teacher expectation in relation to student achievement in their oft cited experimental study. Students in an elementary school with streamed classes were pre-tested using a "standard non-verbal intelligence test" (Rosenthal & Jacobson, 1968, p. 175). A control group of students were allocated their actual results, indicating them as potential high achievers, whilst a second group of students were allocated the same results erroneously by way of random selection. Teachers were told that the test could predict students who would make rapid gains in achievement over the following year. The same test was performed after periods of one semester, one full year and two full years. Results showed a significant, positive difference for students randomly allocated to the "high achievers" group, with such students from the middle stream gaining the most benefit.

Boys and girls were affected similarly. Younger students lost the advantage in the year following the experiment, but older students increased their advantage.

Another interesting finding from Rosenthal and Jacobson's (1968) study was that increases in attainment by students in the experimental group in high streams led to their behaviour being rated more highly by their teachers. In contrast, as attainment increased for low stream, control group students, the more negatively teachers viewed their behaviour. Although current researchers would question the validity of the intelligence tests used in Rosenthal and Jacobson's (1968) early study, research on teacher expectation has now been ongoing for nearly 50 years, providing evidence that teacher expectations can impact on both the performance and the academic achievement of students (Rubie-Davies, et al., 2006). Just as low teacher expectations can negatively impact on student academic achievement, producing negative, undesirable effects, known as Golem effects, so can the opposite can be true; high teacher expectations can produce positive, desirable effects (Galatea effects) on student achievement (Babad, Inbar & Rosenthal, 1982). In either case, self-fulfilling prophecies are the outcome (Brophy & Good, 1970).

Differential teacher expectations of students' academic performance are of interest in the current study, as students allocated to low, middle or high achievement regrouped classes are clearly identifiable by teachers (as well as parents and other students) and may therefore be subjected to such conditions. Rosenthal and Jacobson (1968) theorized that changes in teacher behaviour in areas such as increased attentiveness and reinforcement, and altered non-verbal communication caused by their expectations led to the increase in achievement. Teacher behaviour has been the focus of subsequent research, since that early study by Rosenthal and Jacobson (1968) highlighted the importance of teacher behaviour in the creation of self-fulfilling prophecies for student achievement. Brophy and Good (1970) conducted observations of interactions between teachers and individual students in four tracked (streamed) Year 1 classes. Students were ranked in order of overall achievement by their classroom teacher, and a number of high-achieving and low-achieving students (mixed gender) in each class were selected for observation. The focus of these observations was dyadic interaction between the classroom teacher and any of the sample students. Brophy and Good (1970) determined that the quality of interactions, but not the quantity, differed between high

and low-achieving students, with high-achieving students receiving increased praise and support. High quality work was also emphasized more with high-achieving students. Low-achieving students were criticized more often for incorrect responses, and poor quality work was more often accepted from them.

In cases where teachers try to improve the learning of low-achieving students, additional instruction may be given, but it is likely to be low in quality (Babad, 1993). A meta-analysis by Harris and Rosenthal (1985) identified other behaviours impacting on student outcomes, including wait time, praising high-expectation students and smiling at them. These findings resulted in a focus on classroom climate (which will be discussed later in this chapter) as a mediating effect for teacher expectation. That study also suggested that some differences in teacher behaviours directed towards low-achieving students (such as ignoring them more often) may actually be beneficial. In the streamed classes studied by Brophy and Good (1970), it was found that some classes' achievement levels were higher than expected, whilst others' were lower, although data were insufficient for statistical analysis. This led Brophy and Good (1970) to speculate that teacher expectations affected overall class achievement, as well as that of individuals. Whilst all teachers in the study treated students differently according to achievement level, and the direction of difference was constant for all, the degree of differential treatment was found to vary between teachers, with the least discriminating teacher being the only one who did not base the classroom seating arrangement on achievement. This difference in teacher expectation effect has been investigated by a number of researchers, with findings that some teachers are more predisposed to creating either positive or negative teacher expectation effects than others (Brophy & Good, 1974, cited in Weinstein, Marshall, Brattesani & Middlestadt, 1982, p. 680; Rubie-Davies, 2004 cited in Rubie-Davies, 2007, p.291). These studies found that some teachers favoured high achievers, some favoured low achievers, and others treated students of all achievement levels similarly.

Babad's (1993) review of the literature on teachers' differential behaviour found that whilst students were aware of the expectations conveyed by this behaviour, many teachers did not believe this to be the case and so did not see it as an issue. Just as teachers may be more or less likely to convey differential expectation for students, other research has found that some students may be more susceptible than others to their

effects. Researchers have found this to be the case for minority students (Rubie-Davies, et al., 2006) and students from low socioeconomic backgrounds (Jussim, Eccles & Madson, 1996 cited in Wigfield, Galper, Denton & Seefeldt, 1999, p. 98). Perhaps the good news from all this is that negative teacher expectancy effects may be reduced by the creation of a positive socioemotional climate (Rubie-Davies, 2007), though the potential for this may be limited by the focus in preservice teaching programs on instructional practices more than affective concerns (Babad, 1993). Teachers' behaviour which communicates their attitudes towards students links to classroom climate, which will be discussed later in the chapter.

Another aspect of teacher attitudes which may be relevant is that of teacher satisfaction, as job satisfaction has been linked with job performance (Sweeney, 1982). Sweeney's study of secondary teachers found that teachers of low-achieving students were less satisfied than those working with students of average or high achievement levels, and highlighted the difficulty achievement grouping therefore created. It was proposed that this lower teacher satisfaction could manifest in lower performance, which could then impact further on students. Van Houtte (2006) more recently found similar results, though the effect was deemed to be slight, when studying teachers in Flemish secondary schools. That teachers in technical or vocational schools were less satisfied than their colleagues in general schools was ascribed to the difference in the study culture of students.

The effects of teacher attitudes and student culture may be co-dependant, as Van Houtte (2004) also found that academic staff culture affects student achievement levels. Van Houtte (2004) suggested that students in low achievement groups who were also from low socioeconomic backgrounds were likely to be doubly disadvantaged by the effects of teacher attitudes. These findings led Van Houtte (2004, 2006) to call for the end of hierarchical systems in education, whilst at the same time suggesting that partial setting be maintained for some subjects such as mathematics, languages and sciences. An interesting point raised by Van Houtte (2004) was that whilst achievement grouping may lead to less academic emphasis by teachers for lower groups, these students would still be subjected to academic testing. Whilst his studies related to secondary students, the same is true for Australian primary students in relation to standardised testing as described earlier.

Teaching Practices

Impact. If achievement grouping affects teacher attitudes, it is logical to assume that this could translate into differences in teaching practices (Carlgren, Handal & Vaage, 1994 cited in Hallam & Ireson, 2003, p. 354). This is an important issue, because what teachers know and do have a huge impact on student achievement (Hattie, 2003). The plethora of research into the organisation of classes seems somewhat overdone when it is noted that school effects such as these have been found to produce only small effects on academic achievement outcomes (Rowe, 2003). In fact, the proportion of school effect on achievement was reported by Hattie (2003) at 5-10 per cent, while that of teacher effect was greater than 30 per cent. A quantitative study involving 54 US school systems determined that teacher effects had the dominant impact on student achievement, with factors such as class size and student heterogeneity having only minor influences (Wright, et al., 1997). A cautionary point from Ireson and Hallam (2005) is that the importance of a "day-to-day provision of an effective learning environment … tends to be overshadowed in the focus on personal attributes of inspiring and charismatic teachers" (p. 308). Brown, Askew, Baker, Denvir and Millet (1998) stated that the quality of interaction occurring between teacher and pupils was far more important than class organisation.

As noted briefly in the introduction of this chapter, not all education systems include achievement grouping. In their review, Ireson and Hallam (1999) termed considerations with student differences in ability a "Western concern" (p. 353). In Japan and Taiwan, students who are not performing as well as others are expected to increase their individual effort (with support from teachers and parents) in order to succeed in their education (Stevenson, Lee, Chen, Stigler, Hsu, Kitamura & Hatano, 1990). Some European countries also favour mixed achievement teaching, with teachers responsible for consolidating student learning in a way that allows the whole class to progress together (Ireson & Hallam, 1999).

A number of researchers have claimed that teachers changed their teaching styles for achievement-based classes (Ansalone & Biafora, 2004; Boaler, et al., 2000; Ireson, Hallam, et al., 2002; Wiliam & Bartholomew, 2004). Seventy per cent of elementary

teachers surveyed by Ansalone and Biafora (2004) claimed to adjust their teaching according to the group level they were working with. Wiliam and Bartholomew (2004) concluded that setting was most damaging when teachers used "traditional, teacher-directed, whole class teaching" (p. 289). This is concerning given the emphasis placed on whole-class teaching in the National Literacy and Numeracy Strategies which has led to an increase in setted classes in the UK (Smith, Hardman, Wall & Mroz, 2004). In their previously described study, Hallam and Ireson (2005) found that within-class grouping was used more often in mixed achievement classes, although little of this grouping was achievement-based.

The aforementioned study by Boaler et al. (2000) with secondary mathematics students determined that students from all groups (low, middle and high achievement) were disadvantaged by setting, with students in low groups suffering from restricted opportunities, and those in high groups suffering from high expectations. Whilst the form of these disadvantages differed (low level, repetitive work for low groups, high pressure, fast pace for high groups, with little emphasis on understanding), the overall effect was a "more restricted range of teaching approaches" (Boaler et al., 2000, p.631) in achievement groups. Wiliam and Bartholomew (2004) found similar problems, with secondary mathematics students in low classes presented with a reduced range of instructional methods and undemanding work.

Primary teachers in MacIntyre and Ireson's (2002) study on within-class grouping reported differences in both "the quality of the work planned for different ability groups in addition to the quality of work completed" (p. 260). Both Gamoran (1986) and Dreeben and Barr (1988) studied within-class reading groups in US first grade classes, and both determined that student achievement was directly influenced by different quantities of content taught in different groups. Put simply, "variation in learning is explained by variation in instruction" (Gamoran, 1986, p. 195). It should be acknowledged, though, that student-teacher interactions are more complex than this statement suggests, as teachers may be influenced in how much content is presented by the pace at which students master such content (Barr, 1974). New content may not be presented until the teacher is confident that most students in an instructional group have mastered current content, and this may occur more slowly for low-achieving groups.

Low-achieving groups. Numerous studies have found that ability grouping structures influenced teaching practices (including Hallam & Ireson, 2003, 2005; Haskins et al., 1983; Wiliam & Bartholomew, 2004; Zohar, Degani & Vaaknin, 2001), resulting in different practices being used with low-achieving groups. A study of students in within-class, achievement-based reading groups by Gamoran (1986) found that variation in instruction was the sole determinant of difference in achievement. Through observing 19 classrooms utilising within-class achievement grouping, Haskins et al. (1983) noted that teachers provided more group instruction, direct instruction, drill, error correction, control statements and positive reinforcement with low-achieving groups. They suggested that these techniques were appropriate to the students' "intellectual characteristics and behavioural propensities" (Haskins et al., 1983, p. 875). This suggestion is problematic as it represents a stereotyping of low-achieving students, and ignores the possibility that conditioning has occurred. In Hallam and Ireson's (2003, 2005) studies, teachers from schools employing more setting noted, in regard to low-achieving students, using more rehearsal and repetition, more structured and practical work, less variety of activities, less homework, providing less feedback on homework and spending more time on behaviour management (Hallam & Ireson, 2003, 2005). Teachers in the study by Charlton et al. (2007) also suggested that behaviour management was a major focus in the low set, and that work was less academically challenging.

Intellectual quality. High Order Thinking (HOT) is an indicator of intellectual quality which has been shown to be beneficial for all students but especially for students with low prior achievement (Newmann, Bryk & Nagoaka, 2001). The Quality Teaching initiative (DET, 2003), founded on well established research including the Queensland School Reform Longitudinal Study (QSRLS, 2001) and the aforementioned research by Newmann et al. (2001) and designed to improve teaching, advocates the use of HOT in to improve student academic achievement. A study of secondary teachers found a strong link between the achievement level of tracked (streamed or setted) classes and the emphasis on high order instructional objectives (Raudenbush, Rowan & Cheong, 1993). These results were determined in the teaching of mathematics, science, social studies and English, and were strongest for mathematics and science. Low-achieving students are generally given tasks which focus on basic skills and repetition, with little emphasis on independent thought (Page, 1992 cited in Ansalone & Biafora, 2004, p.

254). Interviews with 40 Israeli junior high and high school teachers showed that almost half the teachers of low achievement classes felt that higher order thinking (HOT) tasks were inappropriate for their students, whilst under a third of teachers from heterogeneous classes claimed to direct HOT questions to higher achieving students (Zohar, Degani & Vaaknin, 2001) .

Differentiation. Boaler (1997a) suggested that the academic achievement of students in setted and streamed groups could benefit if student differences were acknowledged. Differentiation is a practice now covered in preservice teacher education and mandated by the NSW Institute of Teachers' Professional Teaching Standards (NSW Institute of Teachers, 2005). Differentiation is a method of catering for the variation in students which occurs when any number of students is grouped together for instruction (Boaler, 1997a). Through differentiation of instruction, task, resources and/or classroom organisation, teachers are able to cater for individual differences within the class program (Tomlinson, 1999). She stated that practice of differentiation is based on the premise that every student is an individual with their own style and pace of learning, and that teachers have a responsibility to help every child learn. Terwel (2005) described between-class achievement grouping as curriculum differentiation, but this clearly relates to a class level, and Tomlinson (1999) suggests (and Terwel concurs) that such delineation is insufficient, with individual needs requiring consideration.

The most common type of differentiation referred to in the literature on achievement grouping relates to academic level. Through analysis of 150 lesson observations in six secondary schools, Wiliam and Bartholomew (2004) described teachers of setted classes as treating the entire class as being of exactly the same level, so that no attempt at individualization or differentiation was made, although most teachers in Hallam and Ireson's (2005) research did not believe that setting led to teachers ignoring the range of achievement levels in set classes.

Hallam and Ireson (2005) also found a belief that teachers of mixed-achievement classes tended to teach to the level of an average child. In fact, their research showed that only 20 per cent of teachers claimed to prepare different activities for differing levels of achievement in mixed-achievement classes. By contrast, successful mixed-achievement teaching was seen to depend on teacher skills, appropriately differentiated

resources and support (Hallam & Ireson, 2005). These conditions do not always exist, with Tomlinson, Callahan, Tomchin, Eiss, Imbeau and Landrum (1997) finding many teachers to be either reluctant, unable or both, to cater for student diversity through differentiation. The ability to effectively differentiate for students relies on the teacher's knowledge of those students, which may be limited by the amount of time a student spends in a teacher's class, as determined by the school's organisational structure. One concern about differentiation of tasks is that it may be one way that teacher expectation (as discussed previously) is conveyed to students (Weinstein, 2002 cited in Rubie-Davies et al., 2006, p. 440). A further constraint on meeting the individual cognitive and affective needs of students may be the range of achievement levels within the class (Evertson, Sanford & Emmer, 1981). In a study of English classes in US junior high schools, Evertson, Sanford and Emmer (1981) determined that a wide range of heterogeneity may limit the extent of differentiation achieved by a teacher. They also found less engagement and cooperation in high heterogeneity classes, with these effects highest with those teachers identified as less effective classroom managers.

Knowledge integration. Recent innovations in Australian school education such as Quality Teaching in NSW (DET, 2003), as well as the concept of literacies across the curriculum (Hardage, 1999) indicate the acknowledgment that the integration of curriculum areas is beneficial to student learning. Curricular integration is seen as desirable because it more closely resembles the broader experiences of life in which areas overlap rather than being neatly compartmentalized as occurs in a separate-subject approach to education (Beane, 1995). Studies have found integrated teaching programs to be more relevant for students (McBride & Silverman, 1991; Venville, Wallace, Rennie & Malone, 2002) as well as being more efficient in an increasingly crowded curriculum. Through this type of teaching program it is possible for students to learn about one subject whilst learning the skills of another. Many secondary schools now recognise the value of this type of learning, and accordingly include the use of "rich tasks" for assessment**.** Recently, the NSW Department of Education (DET) has encouraged the use of Connected Outcomes Groups (COGs) programs throughout primary schools in an effort to provide learning programs with authentic knowledge integration. These programs typically integrate outcomes from three or four KLAs (combinations of Human Society and Its Environment, Science and Technology,

Creative and Performing Arts and Personal Development, Health and Physical Exercise), but in no case incorporate all KLAs. Neither English nor Mathematics outcomes were incorporated in the initial COGs programs, although some variations have been made since that time. Only 22 per cent of head teachers in Lee and Croll's (1995) study felt that integration of all KLAs was possible**.**

The increased emphasis on achievement on a national scale in the UK saw a reduction in integrated teaching programs in the 1990s (Hallam et al., 2004a). This may be attributed to the increase in setting which followed, as documented earlier (Whitburn, 2001; Hallam, et al., 2004a; Wiliam & Bartholomew, 2004). Opposition to curriculum integration in UK primary schools also came from a Department of Education and Science report (Alexander, Rose & Woodhead, 1992 cited in Lee & Croll, 1995, p. 155), which suggested that specialist teaching would be of more value. Lee and Croll (1995) found that few schools integrated all KLAs, with mathematics the area least often integrated, English taught separately in the majority of schools, and KLAs relating to humanities and science integrated to some extent in over half the schools surveyed.

Should Primary students be regrouped for different subjects, an integrated program is very difficult (but not impossible) to organise, due to a teacher being in charge of up to three different groups of children each day. A whole-school program would be necessary, with strict guidelines as to which topics of study are undertaken across Stages in each year. This would have to be a two year program, then, to prevent repetition occurring for students of Stage-based and composite classes. Also, large amounts of resources would need to be available, at varying levels of complexity, to suit all students across the Stage. Such a prescribed school teaching plan negates the practice of planning to suit students' interests. It is important to note that teachers responsible for up to three combinations of pupils will have less opportunity to develop a strong classroom climate (which will be discussed in detail later in this chapter) or to know their students' individual interests and needs, thus being able to develop teaching plans according to such contextual factors. The benefits of teaching/learning programs which incorporate student direction, background knowledge, cultural knowledge, inclusivity and connectedness in teaching programs are outlined by Ladwig and King (2003) in relation to the quality teaching model, and would be difficult to incorporate in a prescribed teaching program such as that outlined above.

Teacher effect. As a final note relating to what teachers do or do not do in the classroom, the following statement by Wright et al. (1997) is worthy of consideration: "Effective teachers appear to be effective with students of all achievement levels, regardless of the level of heterogeneity in their classrooms" (p. 63). In other words, teachers who are successful in fostering students' academic achievement will do so, for all their students, regardless of whether the class taught is of high, middle, low or mixed achievement level. They also suggested that the continued practice of achievement-based classes in US schools has been a result of educational stakeholders not wanting to hold teachers accountable for student achievement.

Class Size

Overview of Research Findings

Class size is considered by principals when organising students and teachers into class groups, as outlined earlier. When within-class or between-class groupings are used, it must again be considered. Teachers often utilise support staff (where available) to assist during such activities as guided reading. This means that more than one group can be supported by a capable adult. Some schools choose to utilize auxiliary staff (such as support teachers or teacher/librarians) to work with small groups (extension or remedial). In the case of some regrouping schools, such staff are utilised to create an additional class during literacy and/or numeracy sessions in order to reduce overall class sizes at these times. Lower group sizes are sometimes employed with low-achieving groups, whether the situation is between-class (Davies et al., 2003; Hallinan, 1992; Jackson, 1964) or within-class grouping (Haskins, et al., 1983). Whilst the benefits of reduced class size continue to be debated, it is recognised that reducing class sizes overall is expensive, in terms of costs for additional staff, teaching spaces and accompanying resources, explaining the reticence of governments to support such initiatives (Blatchford & Mortimore, 1994). In comparing equal costs, reducing class size was determined to be the least effective of four interventions in reading, and a quarter as effective as peer tutoring in mathematics (Robinson, 1990).

Following an announcement by the NSW government in 2003, state schools in NSW have been gradually required to reduce class numbers, beginning with a cap on kindergarten class size of 20 students (Meyenn, 2003). A trend toward smaller classes has been seen in the US (Lewit & Schuurmann Baker, 1997), and also recently in the UK (Blatchford, Bassett, Goldstein & Martin, 2003) indicating a clear perception on the part of stakeholders in education that reduced class sizes produce benefits for students. Results from research have been less clear (Cooper, 1989; Glass & Smith, 1979), despite more than a century of research in the area (Finn, Pannozzo & Achilles, 2003). Likewise, government responses differ greatly, with schools in NSW limiting Kindergarten classes to 20 students, while in the UK the maximum number of "Reception" students allowed per class was 30, a difference of 50 per cent.

Many early, individual studies related to class size were small in terms of sample size and duration, so that few generalizations could be made (Finn, Gerber, Achilles & Boyd-Zaharias, 2001). Goldstein and Blatchford (1998) pointed out that another difficulty in interpreting the data is the need to consider contextual variables of the different studies, as school, systemic and other background variables may impact on the results. For example, lower achieving students are more often assigned to small classes than are middle or high-achieving students (Akerhielm, 1995), but this may not be accounted for in the research method of some studies. Goldstein and Blatchford (1998) also noted that the method used to calculate class size may influence results, depending on whether actual class size at a particular time of year or student-teacher ratio has been used. An important difference can be found where pupil-teacher ratios have been used rather than actual class sizes, as a class of 30 students with a teaching assistant produces a ratio of 1:15, yet Blatchford, Bassett et al. (2003) found no effect on attainment was produced by the presence of additional adults in classes. This contrasts with data from the Student Achievement Guarantee in Education (SAGE) program in Wisconsin (Molnar, Smith, Zahorik, Palmer, Halbach & Ehrle, 1999) which found comparable results for classes of 15 with single teachers and classes of 30 which were team-taught by two teachers.

Reviews and meta-analyses have been conducted by a number of researchers (Glass & Smith, 1979; Slavin, 1989; Smith & Glass, 1980) attempting to draw more definitive conclusions. Whilst much of the early research looked at the effects of class size on

academic achievement (Blatchford, Moriarty, Edmonds & Martin, 2002), additional variables examined have included student and teacher attitudes as well as teaching practices. It is important to consider these additional variables, as "classroom processes affected by class-size differences might mediate any relationship with outcomes" (Blatchford, et al., 2002, p. 124). Five classroom processes likely to be connected to class size were described by Blatchford and Martin (1998), relating to teaching practices, student behaviour and attitudes of students and teachers. Findings of the relevant studies will be outlined in the following paragraphs.

Academic Achievement

Reviews of large numbers of studies into class size determined that a reduction of class size (to less than 20 pupils) was beneficial to academic achievement (Finn, et al., 2003; Glass & Smith, 1979). The reasons for such results have been argued by many researchers; indeed the results themselves have been widely questioned. Shapson, Wright, Eason and Fitzgerald's (1980) experimental study (the results of which were incorporated into Glass and Smith's [1979] meta-analysis) compared class sizes of 16, 23, 30 and 37 across a range of variables (including attitudes of students and teachers, student self-concept, interaction, participation, instructional method and academic achievement in reading, mathematics, composition and art) in grade four and five classes. They found that academic achievement was only affected (positively) for mathematics concepts. Bourke's (1986) study of mathematics lessons by 63 Australian primary teachers also found improved mathematics achievement in smaller classes. Cooper (1989), in examining compensatory education programs, stated that reduced class size led to increased learning. Slavin (1989) argued that Cooper's review was flawed, being based on previous reviews which had incorporated data from classes of single students. On re-examining the data, Slavin concluded that the benefits were inconsequential until class size was reduced to three students. However, Glass and Smith's (1979) previous meta-analysis focusing on achievement indicated that even when the data from very small classes (less than six students) were removed, results still showed benefits for reduced class size. Hedges and Stock (1983) subsequently reported that although methodology used by Glass and Smith (1979) and Smith and Glass (1980) was open to criticism, their own analyses of the data found the results largely unchanged.

In 1985 a randomised class size experiment was commissioned by the state government of Tennessee. Known as Project STAR (Student-Teacher Achievement Ratio), it involved 79 elementary schools over four years. The data base produced from this project has been used by a number of researchers (including Finn & Achilles, 1990; Finn, Gerber, Achilles & Boyd-Zahaias, 2001; Goldstein & Blatchford, 1998; Mosteller, 1995; Nye, Hedges & Konstantopoulos, 2000). All these researchers agreed that smaller classes (preferably smaller than 20) produced improved results on standardised and curriculum-based tests for mathematics and reading for early primary students. Both Finn and Achilles (1990) and Mosteller (1995) determined that additional improvement was obtained for minority students. Finn et al., (2001) concluded that effects were greatest for students entering a small class in kindergarten and remaining in such a setting "for at least three years" (p. 174), claiming that benefits from this could be seen for a number of years, and the SAGE program produced similar results (Molnar, et al., 1999).

A review of the literature by Blatchford and Mortimore (1994) also agreed that reduced class sizes were beneficial for student attainment, especially for disadvantaged students, but with limitations: that is, the effects were only related to the early years of schooling, with classes of less than 20 students. They also stated that careful planning was needed to attain successful small class arrangements, including inservice training and monitoring. Support for the benefits of small classes on student achievement for the initial years of school and disadvantaged students also came from research on the SAGE program (Molnar, et al., 1999). A separate study involving a large number of primary schools in Tennessee found class size to have only a minor effect on student achievement for students in years 3, 4 and 5 (Wright, et al., 1997). In reanalysing some of the STAR data with multilevel modelling techniques, Goldstein and Blatchford (1998) noted that the effect of class size on reading varied among schools. They suggested that this issue was worthy of further investigation, and stressed the need for future studies into class size effects to establish baselines for contextual variations.

Even if it could be concluded from the above studies that class size reduction has a positive effect on academic outcomes, at least for young students and those from disadvantaged backgrounds, there remained no conclusion as to how or why this was

facilitated (Goldstein & Blatchford, 1998).   Blatchford and various colleagues then undertook a large scale, longitudinal study in order to address what they saw as numerous problems in the previous research: lack of UK based research, baseline data for students involved, accurate measures of experienced class size, and well-designed observational research to determine mediating classroom processes (Goldstein & Blatchford, 1998).   As part of this study, Blatchford, Bassett et al. (2003) confirmed earlier conclusions that academic gains were facilitated by small classes (especially those with less than 25 students), particularly for students in the initial year of schooling, and who had been identified as low achievers on entry to school. Benefits on reading achievement, but not on mathematics, were retained in the following year for students moving to similarly small classes.   This study recommended class sizes of no more than 25 pupils.

Attitudes of Teachers and Students

Numerous studies have determined positive effects on teacher attitudes from reduced class sizes, and some have also claimed improved attitudes for students. Shapson et al. (1980) found that class size impacted on teacher attitudes and opinions, but had little effect on students. Specifically, teachers felt that rapport and individual attention were improved by reducing class size, and that classrooms increased in efficiency and comfort. Blatchford, Edmonds and Martin (2003) also found evidence that teachers of small classes were able to know their students to a greater degree, and teachers in the SAGE program voiced similar opinions. Cooper (1989), in examining research relating to compensatory education programs, stated that reduced class size led to improved attitudes for teachers and students.   He claimed that reduced class sizes improved teacher morale, perceptions regarding workload and performance expectations, as well as decreasing absenteeism.   Cooper's (1989) work incorporates a meta-analysis by Smith and Glass (1980) conducted on the impact of class size on teacher and pupil attitudes and instruction. Their results also stated that teacher and student attitudes were more positive in smaller classes. For teachers, this is likely to be linked to those with smaller classes experiencing lower stress levels (Molnar, et al., 1999; Moriarty, Edmonds, Blatchford & Martin, 2001) and finding teaching more pleasurable (Molnar, et al., 1999). Without wishing to minimalise the importance of teacher attitudes, a comment by Blatchford and Mortimore (1994) worthy of mention is that "reduced class

sizes could make teachers feel more comfortable and make their lives easier, without necessarily improving the quality of teaching or the curriculum experienced by pupils" (p. 425).

Findings regarding student attitudes and class size have been varied. As noted above, Shapson et al. (1980) found no differences for students in relation to either participation or pupil-pupil conflict. Other studies have produced different results. Favourable effects from reduced class size were determined in Smith and Glass's (1980) meta-analysis in terms of student "self-concept, interest in school and participation" (p. 419). That study also found improved classroom climate in smaller classes. Molnar et al. (1999) also found positive differences in small classes, claiming that there were improved student-student relationships in smaller classes, with students "more willing to share their thoughts and problems with the class" (p. 174). This opinion expressed by teachers in interviews and questionnaires was not supported by observations in a study by Blatchford, Edmonds et al. (2003), who found slightly worse peer relations in the smallest classes. These researchers also found students in large classes interacted more with peers (but less with teachers) and were more likely to engage in off-task behaviours.

Classroom Processes

The ramifications of achievement grouping for classroom practices have been discussed earlier. Since class size may be manipulated in relation to achievement grouping, it is also necessary to consider the impact of class size on classroom processes, including teaching practices. As noted by Blatchford and colleagues, much of the research on class size in the 1900s focused on its effect on students' academic achievement without attempting to explain the processes which cause any such effect (for example, Blatchford, et al., 2002; Goldstein & Blatchford, 1998). Accordingly, a large study was undertaken to address this gap in the research, adding to the small amount of information which had already been gathered. Blatchford and Mortimore (1994) stated that teaching practices needed to be adapted to suit class size, as did classroom management. Blatchford and Martin (1998) identified, among other factors, "within class grouping practices" and "the nature and quality of teaching" (p. 118) as likely to be connected to class size.

The previously described study by Shapson et al. (1980) (which found no effect on achievement) determined that instructional methods were not significantly affected by class size, with teachers not increasing individualisation. In fact, although teachers in that study considered that they adapted teaching to suit smaller classes, observations found little support for this. Bourke (1986) also determined that individualization was not affected by class size (nor was engagement), though various other teaching practices were. These included, in smaller classes, the use of more whole-class teaching, less student-teacher interactions, increased probing and wait-time related to teacher questioning of students, increased amounts of homework, and reduction of classroom noise. In contrast to the findings of Bourke (1986) and Shapson et al. (1980), individualised instruction was found to be more common in smaller classes in a number of other studies (Blatchford, et al., 2002; Blatchford, Bassett, et al., 2003; Molnar, et al., 1999; Smith & Glass, 1980). Cooper (1989) found that, as well as an enriched curriculum, other factors affected by reduced class size included "students' learning activities and behaviours, teaching practices, classroom conditions, and 'others' including teachers' morale and parents' involvement" (p. 351).

Research on the SAGE program by Molnar et al. (1999) determined that reducing the pupil-teacher ratio in the early years of school to 15 students per teacher led to teachers having better knowledge of pupils, providing increased individualisation, having more time for teaching and requiring less time for class management. These teachers were more likely to employ teacher-centred methods of instruction, but also claimed to employ more student-centred learning activities including hands-on and enrichment activities. In fact, the researchers suggested that for the most part, teachers faced with smaller classes employed the same pedagogies as with larger classes, but directed them at individuals more often (Molnar, et al., 1999).

A multi-method, longitudinal study involving over 10,000 UK infant students by Blatchford et al. (2002) determined that reduced class sizes produced increases in task-related student-teacher interactions (contrasting with findings by Bourke [1986]), personalisation of those interactions, amount of teaching, as well as teacher knowledge of and sensitivity towards individual students. Blatchford, Bassett et al. (2003) also found that small classes facilitated more teaching time and increased opportunities for

sustained attention, but that less cooperative groupwork occurred. Students in small classes (at least in the first three years of schooling) were less likely to be off task or to interact with peers, but more likely to interact with the teacher (Blatchford, Edmonds, et al. 2003). Within-class grouping practices were found to be affected by class size. In addition to the lack of cooperative groupwork found by Blatchford, Bassett et al. (2003), Blatchford et al. (2001) determined that both numbers of groups and numbers in those groups were affected by class size. In studying the practices of students from Reception, Year 2 and Year 5 classes in 331 schools, they found 25 pupils to be a significant class size. In classes with more than 25 students, groupings of seven to ten students were common, whilst in smaller classes students were more likely to be involved in whole-class teaching. The use of groups with seven or more students was considered by teachers in the study to be undesirable, with students less likely to work cooperatively. Teachers found it difficult to give students the attention required and on-task behaviour could suffer as could the quality of work completed (Blatchford, et al., 2001).

Practices related to reduced class sizes can also be problematic. Blatchford, Bassett et al. (2003) found that the immediacy of feedback facilitated by smaller classes had the potential to increase interruptions to teaching, and needed to be controlled. They also suggested that teachers of small classes may be less likely to employ cooperative groupwork. Results from the SAGE study contradicted this finding, with teachers expressing the view that they were better able to organize small groups to suit perceived learning needs in small classes (Molnar, et al., 1999), but it has been noted previously that teacher perceptions do not always match what is observed. Despite these few negative findings, adequate literature exists to substantiate the benefits of many of the classroom processes mentioned above for student achievement, so it becomes increasingly difficult to support an argument that reduction in class size alone can improve student learning outcomes. Of course this is not to say that class sizes should not be reduced, rather that the benefits could also be achieved by altering the above conditions in other ways. Likewise, the conflicting findings of various researchers indicate that the possible advantages of reduced class size do not result automatically, but rather in cases where differences in teaching occur concurrently (Blatchford & Mortimore, 1994).

Classroom Climate

Importance

The class, like the school, is a social, as well as educational, organisational construct. It consists of a number of interpersonal relationships, with a view to facilitate educational goals related to socialisation, knowledge and personal development (Johnson, 1981). Many of the affective attributes listed above as being linked to small class sizes (such as personalization of interaction and sensitivity towards individuals) relate to what is termed the "classroom climate". This is sometimes called the classroom ethos and, regardless of terminology, it relates to the dynamics of relationships between pupils and teachers within that organisational environment. The important role played by personal interaction in schools was acknowledged early last century by Waller (1932), and teachers have long been seen to be responsible for students' personal and social development in addition to academic concerns (Jackson, 1968; Nias, 1996). Students' relationships with teachers and peers have been found to be linked to adjustment to school (Ladd, Kochenderfer & Coleman, 1997), engagement with classroom activities (Furrer & Skinner, 2003; Ladd, Birch & Buhs, 1999), behaviour (Birch & Ladd, 1998; Hamre & Pianta, 2001; Pianta & Stuhlman, 2004; Wentzel & Caldwell, 1997) and academic achievement (Burchinal, Peisner-Feinberg, Pianta & Howes, 2002; Hamre & Pianta, 2001; Ladd, Birch & Buhs, 1999; O'Connor & McCartney, 2007; Pianta & Stuhlman, 2004; Wentzel & Caldwell, 1997).

Likewise, classroom relationships affect self-esteem, which is also positively linked with student attainment (Lawrence, 1996). The NSW Quality Teaching Model uses the term "social support" (NSW DET, 2003, p. 16) to describe positive classroom relationships, and stresses its importance in encouraging student engagement, in turn affecting attainment. Classroom climate is relevant to the current study as it may be affected by both the regrouping practice and the often concurrent manipulation of class size. The regrouping practice affects the amount of time that students spend with particular peers and teachers throughout the school day. The associated changes in class size affect the number of peers with whom students have classroom contact, as well as the amount of time the teacher has available for each individual student.

Student-Teacher Relationships

The quality of student-teacher relationships, as well as the level of impact those relationships have is likely to be affected by the amount of time a student spends with a particular teacher, and vice versa. Because of this, differential outcomes would be expected depending on the grouping structures operating within schools (Pianta, 1999). The quality of student-teacher relationships has been positively linked to achievement in studies with students from pre-school (Burchinal, et al., 2002) through to higher education settings (Moos, 1979). Teachers have a substantial impact on students' sense of belonging in a classroom community, given their relative control over the interactions occurring in a classroom (Battistich, Solomon, Kim, Watson & Schaps, 1995 cited in Osterman, 1998, p. 37).

Relationships develop through interactions between parties involved, with frequency, duration and quality of interactions likely to affect relational outcomes. At the core of these interactions is communication, whether verbal or non-verbal (Watzalawick, Beavin & Jackson, 1967), and which is subject to interpretation (Marshall & Weinstein, 1986). Positive student-teacher relationships may ease discipline problems in classes, especially for early career teachers (Wubbels, Creton & Holvast, 1998, cited in Fraser & Walberg, 2005, p. 107), and may improve the chances of students academically at risk (Birch & Ladd, 1996 cited in O'Connor & McCartney, 2007, p. 341; Burchinal, et al., 2002).

Pianta (1999), who has produced a substantial body of research on student-teacher relationships, stated that stressors due to increased class sizes impact negatively on the quality of student-teacher relationships. He contended that as class size is decreased, opportunities for instruction and relationships increase. The quality of student-teacher relationships has been found to decrease as students progress through school (O'Connor & McCartney, 2007). Pianta (1999) noted that student contact with individual teachers tended to become increasingly fragmented as they progressed through school, but that special education interventions often acted to reduce the number of teachers with whom a student interacted. Erickson and Pianta (1989) claimed that movement between classes and having a number of teachers (as occurs in regrouping) would reduce the ability of teachers to positively impact on children's outcomes through the development

of positive, sustained relationships. Pianta (1999) suggested that school policies which facilitated extended student-teacher contacts on daily and yearly bases would provide most benefit for students, especially those with greatest relational needs. The fragmentation of student-teacher contact afforded by regrouping would not be optimal for such relationships.

Heterogeneous classrooms may have different limitations. Teachers tend to be seen as more business-like in classes with a wide range of achievement levels as they have less time to attend to the affective needs of their students (Evertson, Sanford & Emmer, 1981). Less time is available for these teachers to spend conversing with students on non-academic topics, which would facilitate the development of relationships and background knowledge of the students. Any pressure on teacher time may produce similar results; however, the time saved by keeping heterogeneous classes together for all learning may alleviate this difficulty. Pollard et al. (1991) determined, from teacher interviews in the PACE study, that increased external requirements relating to curriculum and assessment were perceived as adversely affecting their relationships with students. This factor may affect any classroom, regardless of grouping structure.

Student-Student Relationships

Early research on classroom relationships focused on those between students and teachers, according to Johnson (1981), as teachers were considered to have the most powerful influence on what occurred in the classroom. Johnson (1981) contended that interaction between students may be more important in determining success at school, with the proviso that such interaction needed to be positive and supportive for optimal benefit. Since that time, peer relationships have consistently been found to correlate with academic achievement at various levels of education through increased motivation and engagement (Furrer & Skinner, 2003; Ladd, et al., 1997; Oakes, 1982; Wentzel & Caldwell, 1997).

The grouping of students for instruction is likely to affect the development of students' social skills and relationships (Hallinan & Sorensen, 1985). In their study of 32 US elementary classes employing within-class achievement groups for reading instruction, Hallinan and Sorensen determined that student friendships were influenced by the

grouping practices used. Although these groups only operated for approximately 30 minutes per day, seating arrangements actually meant that proximity was maintained for significant amounts of each day. The relative stability of group membership was seen to contribute to the effects, which were greater with larger groups. The researchers considered that social ties were promoted among group members through similarity (in this case, similarity of achievement level and shared experiences within the group) and by the enforced proximity in the grouped situation. Whilst Hallinan and Sorensen suggested that such grouping could be used by teachers to foster friendships for isolated students, they also cautioned that a "stratified friendship network" (1985, p. 499) may be an outcome, and this may be especially problematic where students with certain characteristics (racial or socioeconomic) are over-represented in some groups. It is also important to note that, since the successful implementation of achievement grouping has been seen to be linked to fluidity of membership, there would be a different effect on student relationships where this occurs, or where students move between different groups during the day.

The reduction in class size that often accompanies low achievement classes may affect peer relations, as it has been suggested that these may not be as positive in smaller classes. As noted previously, students in smaller classes may become over-reliant on the teacher, with pupil-pupil relations suffering as a result (Blatchford, Edmonds, et al., 2003).

Impact of achievement levels

Given that relationships are dependant on communication (Watzalawick, et al., 1967), and its interpretation (Marshall & Weinstein, 1986), differential attitudes of some teachers as described earlier (Brophy & Good, 1970) are of concern. Where students are aware that teachers view them less favourably than others, those relationships will be negatively impacted, which may lead to lower achievement (Rubie-Davies, et al., 2006).

Classroom environment has been seen to be affected by the level of heterogeneity or homogeneity of achievement within a class (Evertson, Sanford & Emmer, 1981; Veldman & Sanford, 1984). In a study of 136 English and mathematics junior high

classes in the US, Veldman and Sandford (1984) found that such differences had a greater impact on the attainment of low-achieving students than on high-achieving students. This highlights the importance of teachers communicating high expectations for all students, especially those seen as low-achieving.

In academically stratified schools, the group level to which a student belongs has been found to affect student relationships with peers (Osterman, 1998). Research by Schwartz (1981) in US elementary and junior high schools involved the systematic observation of teacher and student behaviour, the collection of student records and interviews with parents and students. It was found that tracking contributed to a social hierarchy. Students in high-achieving classes were supportive of one another, whilst those in low-achieving groups engaged in criticism of their peers, in an apparent effort to distance themselves from the group seen as undesirable. Accordingly, it is likely that these students suffer generally from a less positive classroom climate, and academic achievement suffers further.

Summary

The aspects of schooling which may be affected by achievement-based grouping practices are numerous and varied. In this literature review, therefore, studies related to a number of areas have been included.

Studies related to the organisation of classes have been included, as the process of allocating teachers and students to classes varies depending on the criteria used by school principals for creating classes, including homogeneous achievement levels for students. Larger schools have more options for organising students than small schools. Research as to how and why designated achievement-grouping is organised has also been covered, as that is the practice examined in this study, and may be responsible for some effects of the practice. In addition to considerations related to student numbers and achievement levels, schools may consider separating some students for behavioural reasons. National assessment programs have been identified by a number of British researchers as encouraging the use of between-class achievement grouping in the UK (for example Hallam, et al., 2003; Hallam, et al., 2004a), and so studies regarding the influence of such testing contribute to this topic.

Achievement grouping may take multiple forms, and these have been outlined, with definitions as to the types included in the relevant literature, followed by a summary of the history of the practice in order to provide solid context for the current study. Benefits for student academic outcomes were the focus of early studies and are commonly cited as the justification for implementing achievement grouping. Despite this, examination of the literature provides no definitive conclusion that between-class achievement grouping is beneficial for student academic outcomes. At the primary level, no research has examined academic achievement in relation to regrouping, whilst research conducted in secondary schools has found no overall benefit, and has been generally critical of the practice.

Studies into the affective outcomes of between-class achievement grouping have been a focus in recent years, with findings varying among studies. Whilst some researchers have suggested that attitudes towards school are unaffected by grouping structures employed, some studies have suggested that students preferred regrouping to mixed-achievement classes, whilst others found that many students were unhappy with their group placements. Additionally, student attitudes towards subject areas were negatively impacted by regrouping, according to some studies. The affective outcomes studied in other research have included student and teacher attitudes, the latter of which led to an examination of findings related to effects on classroom practices. Teachers have been found to alter practices for achievement based classes, with different strategies used between low- and high-achievement groups.

Classroom climate, which has been positively linked with student achievement, was also considered likely to be affected by regrouping due to its effect in reducing the amount of time a student would spend with one teacher and group of cohorts. A student's gender or achievement level may cause them to be affected differently by the regrouping practice, and so research in these areas has also been reviewed. Boys have been found to perform less well in many areas of schooling in recent years, and can be concerned with the status attached to achievement groups. Girls have more positive attitudes towards school generally, but can be disadvantaged by the pressure and pace of working in the top classes.

A section of this chapter has also been devoted to the literature on class size, as there is a tendency for low-achieving groups to be made smaller in size than other groups, and class size has also been studied in relation to possible effects on academic achievement, student and teacher attitudes and classroom practices. The general consensus from the research is that limiting class size to no more than 15-20 students is beneficial to students in the early years of schooling, but the positive effects do not occur for older students.

The practice of regrouping has implications both for and from all the areas outlined above. A simple study of one aspect would therefore be of limited use. The present study has been designed with this in mind, and so gathers data from a number of sources, in a range of ways. By considering these myriad outputs it is anticipated that the study will illuminate many aspects of both cause and effect arising from the regrouping practice.

We return, then, to the questions raised in the overview. If student learning benefits from being part of a cohesive, stable class (Burns & Mason, 1998), and much of the literature suggests that between-class achievement grouping provides little or no benefit in terms of student achievement (Slavin, 1987), why are some primary schools currently regrouping students for large parts of the school day for tuition in reading/literacy and/or mathematics? What are the effects of regrouping on students of differing achievement levels in terms of academic achievement and attitudes towards school, incorporating social relationships? How do the effects differ for each gender? What impact does regrouping have for teachers in terms of workload, attitude, teaching practices and social relationships? Are the overall effects of regrouping for selected subjects more beneficial than those created where an integrated curriculum is taught in heterogeneous classrooms? The following chapters outline the methods used in this study, the results obtained and a discussion of those findings in relation to the existing literature and future considerations.

CHAPTER 3
REGROUPING STUDY METHOD

Introduction

The study was designed to investigate what effects, if any, the use of separately streamed literacy and numeracy classes had on student academic achievement and attitudes towards school, as well as teacher attitudes and practices, in a sample of primary school classes. It was recognised, as apparent in the literature review, that there could be a wide range of effects generated by the use of the described regrouping structure. In order to gain comprehensive results from an investigation into these, a mixed method study was devised. That is, a combination of both qualitative and quantitative data was collected.

Although, historically, the reasons for ability based grouping would seem to focus on an assumption that it would facilitate academic achievement, it has been noted that such arrangements have wider ranging results, including social repercussions (Jackson, 1964). As stated by Ireson and Hallam (1999) in their review of the literature, many studies have focussed on either achievement or social outcomes, making it difficult to assess the overall outcomes of various grouping structures. Therefore, it was deemed necessary in this study to examine more than just academic outcomes. Social effects were targeted for inclusion, with both teacher-student and student-student relationships selected for investigation, as well as general attitudes towards school. Likewise, how teachers were affected by the arrangement was also deemed to be relevant, as this was likely to have repercussions (either directly or indirectly) for students. The impact of regrouping on classroom practices has been shown by previous research to be especially relevant, as those practices are known to affect student outcomes (Hill & Rowe, 1998).

In order to gain an accurate picture of the effects of the regrouping strategy, student performance and attitudes in a group of schools using the regrouping strategy were compared with a group of schools which were utilising mixed achievement classes (referred to as non-regrouping schools). In order to determine the effects of the regrouping strategy on student achievement, Basic Skills Test (BST) growth data were analysed for differences related to performance in English, mathematics and writing. In

determining effects on student attitudes towards school, Quality of School Life (QSL) survey data were analysed for differences related to "general satisfaction, negative affect, teacher-student relations, social integration, opportunity, achievement, and adventure" (Ainley & Bourke, 1992, p. 107). To gain background information about the organisational strategies used within schools and attitudes towards these, interviews were conducted with school principals and teachers. Teacher interviews also provided information about teaching strategies used in classrooms. Classroom observations were also included, in order to confirm information provided by teachers as to the strategies used, as Smith, Hardman, Wall and Mroz (2004) reported finding inconsistencies between teachers' reports on their teaching of literacy and numeracy, and data gathered during classroom observations. Classroom observations could also be used to illustrate any differences between classes, such as teaching practices or resources used, which might affect results obtained by the study.

This chapter describes the methodology of the study in detail. Firstly, the subjects of the study (schools, principals, teachers and students) are described. Secondly, the instruments used in the study (Basic Skills growth data, Quality of School Life survey, interviews and classroom observations) are detailed. Finally, methods used to analyse the data are discussed.

<div align="center">Subjects</div>

Schools

In total, eight schools were included in the study, with four schools practising regrouping, and four having mixed-achievement classes. This provided two groups of schools for comparison. All schools were situated within the greater Newcastle area, and were from both State (six) and Catholic (two) school systems. Each group contained three State schools and one Catholic school.

The group of schools which will be referred to as regrouping schools regrouped students according to achievement for both literacy (approximately 90 minutes per day on four or five days per week) and numeracy classes (approximately one hour per day on four or five days per week). The students were taught in a mixed achievement "home" class

for the remainder of the day (approximately 2 hours per day, four or five days per week). Students were allocated to groups based on achievement in a range of assessment tasks completed in the previous year as well as, in some cases, teacher observations (further details about this will be provided in the chapter on results of the study). Three of these schools reduced the size of the regrouped classes by utilising extra staff, enabled by the fact that the schools attract Priority Schools Funding due to characteristics including the socioeconomic background of the students. In particular, the lowest achieving groups were deliberately the smallest in size, in order to provide better for those students' needs. The fourth school, which was not eligible for such funding, also reduced the size of the lower achieving groups, in this case by boosting numbers in the higher achieving groups. Home classes in all four schools were stage-based, containing students from both Year 5 and Year 6 in Stage 3 classes, and were similar in size (approximately 25-30 students). All of the regrouping schools had Kindergarten classes operating autonomously. Three of the four regrouping schools regrouped students in stages 1, 2 and 3. In two of these, students were regrouped across stages, and in one the regrouping was conducted within stages, with exceptions made in special circumstances (such as parental request or special needs students). In the fourth school, classes in stage 1 were graded, whilst students in stages 2 and 3 were regrouped within their stage. Table 3.1 provides a summary of this information.

Table 3.1 Regrouping arrangements

School	Graded	Regrouped across stage	Regrouped within stage
Regrouping A		Stage 1, 2, 3	
Regrouping B	Stage 1		Stage 2, 3
Regrouping C		Exceptions	Stage 1, 2, 3
Regrouping D		Stage 1, 2, 3	

The other (control) school group used mixed achievement classes which remained with the same teacher for all Key Learning Areas (KLAs) other than those which were taught during relief from face-to-face sessions. Specific timetables varied among schools. Classes in three of these schools were organised in separate grades (for example, Year 5), with a number of composite classes to cater for the numbers of students. The fourth school in this group used Stage-based classes, with numbers also requiring across-stage

composites in some cases. Class sizes in these groups were similar to "home class" sizes in the regrouping schools.

Sample selection. Schools were sought which utilised the regrouping strategy to be researched. When it became apparent that all schools found to be suitable and willing as part of the target group fell into a low socioeconomic category, it was desirable that the regrouping schools should also meet this criterion. In this way it was hoped to provide something approaching comparable schools in the two groups, thereby avoiding socioeconomic differences between school groups which could otherwise obscure any results. This was important, as socioeconomic status has been found to impact on students' academic achievement, as shown in Sirin's (2005) meta-analytic review.

The Educational Measurement Directorate, NSW Department of Education and Training (DET) categorises State schools into "Like School Groups" according to factors including location, academic outcomes and socioeconomic status. Data collected through BST results, Socio Economic Indicators for Areas (SEIFA) and Accessibility Remoteness Index of Australia (ARIA) are analysed to determine schools' allocation to Like School Groups. All six State schools in the study were identified by the Educational Measurement Directorate as being from the same Like School Group, that being Metro B, which is the second lowest category for metropolitan schools. The Catholic schools were not able to be assessed using this system, but it is noted that they were located in close proximity to State schools which fell in the same category. It is noteworthy that all State schools involved were part of the Priority Schools Funding Program (PSFP), and that one of the non-regrouping schools was also included in the Priority Action Schools Program (PASP). Both programs were established by the NSW DET in order to support disadvantaged schools. PASP was aimed at schools with particularly deep needs. These factors clearly identify all schools included in the study as being disadvantaged. If there was any difference in socioeconomic status between the groups of schools, it would most likely have been that the non-regrouping schools had, on average, lower socioeconomic status than the regrouping schools.

Schools varied in size, with seven having a student population in the range of 200-300. The eighth school (a non-regrouping school) had over 400 pupils. Again, choice of size was not deliberate. It was initially expected by the researcher that larger schools would

be more likely to use the regrouping structure, as student numbers would allow increased homogeneity within regrouped classes, but this was not found to be the case. Schools found using the regrouping structure were more often in the range of 200-300 pupils.

Principals

Principals from all eight schools each participated in a taped interview, describing their perceptions of the organisational structures used in their schools and the impact of these on teachers and students. They provided access to class lists and student data for which consent had been obtained from parents and, in some cases, students. Additionally, the principals provided access to teachers for interviews, and to students for administration of the QSL instrument. All instruments are described later in this chapter.

Teachers

All Year 5 (or Stage 3, depending on how the school organised classes) teachers from each school were invited to participate. Reasons for selecting this Stage will be outlined in the section on students which follows. There were 12 teachers for the regrouping schools and seven teachers from the non-regrouping schools. Participation took two forms for the teachers. The first was participation in an interview, and the second was to allow classroom observation for the period of one teaching day by the researcher.

Of the 12 teachers in regrouping schools, eight (representing three schools) agreed to taped interviews, and seven of those to the classroom observations. Of the eight teachers in the non-regrouping schools, five (representing all four schools) agreed to taped interviews, with a further two providing written responses to the printed interview questions. Three teachers (representing three schools) from this group agreed to the classroom observations. A summary of the information regarding teacher participation can be found in Table 3.2.

Table 3.2 Teacher participation

School	Stage 3 or Year 5 teachers	Teacher interviews	Classrooms observed
Regrouping A	3	0	0
Regrouping B	3	3	3
Regrouping C	3	2	2
Regrouping D	3	3	3
Regrouping sub-total	*12*	*8*	*8*
Non-regrouping A	3	3	0
Non-regrouping B	2	1	1
Non-regrouping C	1	1	1
Non-regrouping D	2	2	1
Non-regrouping sub-total	*8*	*7*	*3*
Total	20	15	11

Students

Stage 3 (Years 5 and 6) students from all eight schools were invited to participate. A detailed letter of information was distributed to the students by their class teachers, and a number of weeks were allowed for return of these. There was a very low response rate in all except one school. This constraint must be considered in relation to the results of the study. From a possible 584 Stage 3 students, 168 students (29 per cent) returned signed consent forms (see Table 3.3).

Table 3.3 Student consent rates

School	Students in Stage 3	Consenting students	Percentage consenting (%) per school	Percentage of school group total
Regrouping A	54	6	11	8
Regrouping B	55	49	81	62
Regrouping C	70	17	24	21
Regrouping D	80	7	9	9
Non-regrouping A	150	27	18	31
Non-regrouping B	80	17	21	19
Non-regrouping C	60	18	30	20
Non-regrouping D	55	27	49	30

The reasons for selecting Stage 3 students were twofold. Firstly, Basic Skills testing takes place in Years 3 and 5, so the BST growth data were available for students in Years 5 and 6. Secondly, students in this age group are considered to be able to competently complete the Quality of School Life survey for affective measures.

In addition to BST and QSL data, gender of the students was noted, along with their year of schooling (Year 5 or 6), and for students in regrouping schools, their allocation in terms of literacy, numeracy and home class groups. Only home class group was needed for students in non-regrouping schools.

Instruments

Basic skills test growth results

In NSW primary schools, from 1989 until 2007, standardised tests were conducted in the areas of literacy, mathematics and writing for students in Years 3 and 5. The tests were compiled and marked by the NSW Department of Education (DET), and were administered under strict guidelines. Schools, parents and students were provided with results which provided a snapshot of the students' performances in the tests and could be used to support future planning within the schools. Where Year 5 students completed both the Year 3 and Year 5 tests at the same school, growth results were also provided. These growth results provided students with a value which indicated each student's growth in performance between the two sets of tests. Such data are often referred to as "value added" (Hattie, 2003) or "change scores" (Fulcher & Willse, 2007). The use of change scores in research has been criticised on the basis of increased unreliability caused by added measurement error (Ewell, 2002 cited in Fulcher & Willse, 2007, p.10). Much of this criticism has stemmed from the report by Cronbach and Furby (1970) which may have been overstated according to Fulcher and Willse (2007). A review by Zumbo (1999) suggests that growth results are reliable in many situations, with unreliability only occurring when a number of conditions are in existence. BST growth results are calculated and used by the NSW DET in measuring school effectiveness. Growth results were chosen for analysis in this study as it was thought that these would most accurately describe the effects on achievement of the regrouping strategy, as this strategy was often not implemented in schools until Stage 2

(Years 3 and 4). An added advantage of using growth results is that they account for prior attainment, which is known to affect student academic outcomes (Hattie, 2003).

Whilst it could be expected that all students would obtain a positive value for this result, this is not always the case, with some students achieving a negative growth result. In cases where students were absent for any of the BST tests, or had completed them at different schools, these data were not able to be obtained. Whilst there is a widely held belief that standardised tests such as these may not accurately reflect students' learning (Alloway & Gilbert, 1998; Wright, et al., 1997), these results provide a useful tool for comparing basic achievement levels between schools operating under similar conditions. Table 3.4 shows the number of data obtained for each test from individual schools, as well as totals for school groups.

Table 3.4 Distribution of BST growth data

School	Literacy growth N	Mathematics growth N	Writing growth N
Regrouping A	5	5	6
Regrouping B	27	28	11
Regrouping C	13	13	6
Regrouping D	5	5	6
Regrouping schools total	*50*	*51*	*29*
Non-regrouping A	18	20	14
Non-regrouping B	14	14	14
Non-regrouping C	14	14	5
Non-regrouping D	22	21	14
Non-regrouping schools total	*68*	*69*	*47*
Overall total	118	120	76

Quality of School Life results

The Quality of School Life instrument (Appendix A) was designed by Ainley and Bourke (1992) specifically for use in primary schools, has been thoroughly tested and is widely used. The questionnaire's overall purpose is to determine students' attitudes towards school. There are five specific and two general scales (Appendix B) embedded

in the 40 questions on the survey, and these are interrelated. The scales assess "general satisfaction, negative affect, teacher-student relations, social integration, opportunity, achievement, and adventure" (Ainley & Bourke, 1992, p107). Students respond to each question using a Likert-type scale. It should be noted that the QSL instrument was not specifically designed for use in primary schools with regrouped classes, and this is a limitation which should be considered.

Where possible (two regrouping and three non-regrouping schools), the QSL was administered by the researcher, often in the school library or an otherwise unoccupied classroom. In the case of three schools, the QSL had been administered by school staff as part of the school planning program. For two of these schools, this meant that individual data were not able to be obtained. Technical problems meant that all QSL data from one of these schools were lost by the DET during the tabulation and analysis process, and were unable to be retrieved. For another school, the data had been obtained (anonymously) prior to the researcher's approach to the school, so identification of individual results was not possible. In cases where students were absent on the day of QSL administration, these data were not obtained. These difficulties meant that, in the case of regrouping schools, the vast majority of the QSL data (86%) came from one school, as demonstrated in Table 3.5, and this must be noted as a limitation to be considered in relation to the results obtained in the study. A further limitation arises from the fact that students in regrouping schools responded in general terms to the statements regarding teachers. That is, these students had more than one teacher, but the QSL format did not allow for discrimination to be made between these teachers. Distribution of QSL data is shown in Table 3.5.

Table 3.5 Distribution of QSL data

School	QSL N	Percentage of total data for school group
Regrouping A	0	0
Regrouping B	44	86
Regrouping C	0	0
Regrouping D	7	14
Non-regrouping A	25	32
Non-regrouping A	16	20
Non-regrouping A	15	20
Non-regrouping A	22	28

Interviews

Both principals and Stage 3 teachers from all schools were asked to participate in interviews regarding the schools' organisation of classes.

Principals. Two separate sets of interview questions were designed for principals – one for schools practising regrouping (Appendix C), and one for principals of non-regrouping schools (Appendix D). Questions related to the history and processes behind the schools' organisation of classes, as well as the principals' perceptions of the resultant outcomes.

Teachers. Two separate sets of interview questions (one for each school group) were designed for teachers of Year 5. This was necessitated by the different organisational structures the teachers were working with. Both groups were asked background questions identifying gender, qualifications and length of teaching experience. Questions for regrouping teachers (Appendix E) centred on their views of the regrouping strategy (initial and current), perceived advantages and disadvantages of the arrangement, and classroom practices. Questions for non-regrouping teachers (Appendix F) targeted views on mixed ability classes, classroom practices, and ascertained experiences the teachers may have had with regrouped classes, along with perceptions of these.

Where allowed, interviews were taped, with transcriptions being returned to teachers for approval. Taping most often occurred in teachers' classrooms during non-teaching times. As mentioned above, a small number of teachers chose to provide written responses to the printed questions.

It should be noted that interview questions were, for the most part, somewhat generalised. For example, teachers were asked to name advantages of particular strategies, an open ended question, rather than being asked whether they perceived particular aspects as being advantaged or disadvantaged. This was done in order to avoid having teachers provide what they may perceive as the "right" answer, as opposed to their own opinions. However, because of this, teachers may have omitted mentioning some things if they did not occur to them at that particular time.

Classroom observations

A pro forma for classroom observations (Appendix G) was modelleded, in format, on the pro forma designed for classroom observations relating to the Quality Teaching Model (NSW DET, 2003). Description was used to record the observations (as opposed to ratings) to make the instrument less threatening for teachers. Factors to be observed were types of organised interaction, resources, differentiation of tasks and resources, integration of KLAs, and length of each teaching phase. Organised interaction was noted regarding grouping methods used within the class such as pairs, small groups (formed according to social, behavioural or achievement characteristics) or whole-class tasks or discussions. Resources were described relating to type (such as hands-on or text) and source (such as teacher designed or reproduced worksheet). Degree of task or resource differentiation was noted. Variables including teacher, subject and class type (mixed, high, middle or low achievement) were also noted.

The purpose of these observations was twofold. Firstly, they would provide confirmation of teachers' interview responses: that is, they could confirm that teachers' stated perceptions about classroom practices were accurate. Secondly, they would allow the researcher an opportunity to ascertain any other factors occurring within the classrooms which may affect results.

Where allowed, the researcher spent one school day observing each class. A separate observation schedule was used for each lesson. Observations took place by arrangement with the classroom teacher (that is, the teacher knew, in advance, the day the observations would take place). As reported earlier, seven regrouping and three non-regrouping teachers agreed to the researcher conducting observations for one full day per class. Because each teacher was observed for a full day, in the case of regrouped schools lessons were observed during both regrouped and home (mixed achievement level) classes. In the case of "extra" staff such as a teacher/librarian taking regrouped classes to reduce group sizes, only the regrouped classes were observed, as the staff member then went back to other duties not necessarily with the target group of students. When time taken up by non-teaching activities (administration, sport, assemblies and so on) was excluded, 39 lessons in regrouping schools and 14 lessons in non-regrouping schools were observed.

Basic skills test growth results

Quantitative data were analysed using the "Statistics Package for the Social Sciences" version 15.0 program (SPSS15). BST growth results from the two different school groups were compared using independent sample *t*-tests (with Levene's test for equality of variances). The effect of gender was also measured in this way. Results between schools, group levels and between classes in both school groups were compared using analysis of variance incorporating Scheffe's *post hoc* test to determine the source of the differences when those were significant. The $p < .05$ significance level has been applied in all cases.

Quality of school life results

The methods described above were also used with scale scores from the Quality of School Life instrument. That is, mean scores from the QSL questionnaire for regrouping schools were compared with those of schools with stable classes using independent sample *t*-tests (with Levene's test for equality of variances). Overall and within each school group, differences in results between girls and boys were examined using independent *t*-tests. Differences in results between group levels (low, middle, high and mixed achievement) were examined using analysis of variance incorporating Scheffe's *post hoc* test.

Additional quantitative analyses

Crosstabulation incorporating Pearson's Chi-square test of significance was used to demonstrate distributions and determine differences in regrouped class composition by gender and grade.

Principal and teacher data

Information obtained through questionnaires and/or interviews with principals and teachers was used to provide context information and description. Responses from

principals and teachers in the two groups were analysed for comments relating to the research questions, and were compared for patterns, similarities and differences.

Classroom observation data

Classroom observations were compared in relation to the components of time spent on teaching and learning activities, organised interaction, types and differentiation of resources and/or tasks and KLA integration. These data were used to provide descriptions of classrooms as well as possible explanations for any differences between classes as found through the data analyses outlined above.

Summary

As described above, data were collected from principals, teachers and students in two groups of schools. Data took the multiple forms of BST growth results, QSL results, interviews and classroom observations. By incorporating both quantitative and qualitative research in this study, the research questions related to the regrouping strategy were able to be answered more comprehensively than would otherwise have been possible.

CHAPTER 4

EFFECTS OF REGROUPING

Introduction

The study aimed to determine the effects on student learning outcomes and attitudes towards school arising from the implementation of regrouping for achievement in literacy and numeracy classes in primary schools. A mixed method study was devised to examine this. Quantitative data were taken from Basic Skills Test (BST) growth results and Quality of School Life (QSL) survey results. Qualitative data were gathered through interviews with principals and teachers as well as classroom observations. This chapter presents the results of the data analyses. The information has been organised according to the research questions, rather than according to the data type or source. That is, when addressing a particular research question, all data that relates to that particular question have been grouped together. In this way, a clearer picture will emerge as to results for each aspect of the topic.

Firstly, results are presented on the organisation of classes and the decision-making process behind the organisation by both regrouping and non-regrouping schools. Secondly, results relating to the effects on academic achievement caused by the different grouping structures are presented, along with differences by group level (low, middle, high or mixed achievement) and gender. Thirdly, results relating to student attitudes towards school are presented, also looking at structure, group level and gender. Fourthly, results relating grouping structure to teaching practices are presented. Next, results pertaining to any other aspects of schooling related to regrouping which arose during the study are reported. Finally, all these results are reported in summary form, highlighting the most definitive results.

The focus of this study was the practice of achievement grouping: its effects on student outcomes, teacher attitudes and classroom practices. In order to examine the effects of grouping structures independent of other variables possibly affecting student outcomes, ANOVA was used to determine differences which might occur at individual school or home class levels. Analysis of variance was used to determine differences in both BST and QSL results and, whilst there were some overall significant differences between

schools, no differences between any individual schools were determined by the analysis. Similar results were found when targeting home classes. Therefore, any significant differences found in the following results can confidently be assigned to the different grouping structures studied, rather than to individual schools or home classes (and therefore teachers).

<div align="center">Organisation of Classes</div>

Decisions Regarding Regrouping/Non-regrouping

Background information. In total, eight principals were interviewed - four from regrouping schools and four from non-regrouping schools. Every principal interviewed had been in the teaching profession for between 20 and 40 years. All had been at their current school for between five and ten years. Of the principals from regrouping schools, there were two males and two females. Of the principals from non-regrouping schools, three were male and one was female.

Regrouping decisions. In the regrouping schools, the decisions to implement the regrouping strategy had been made between five and ten years or more prior to the study taking place. In two cases it was unknown who had made that decision or why. Most reasons given for implementing regrouping related to some aspect of student attainment. In one case the decision had been made by the previous principal based on students' reading results. In one case the current principal and staff had made the decision based on students' perceived academic needs. A teacher from this school mentioned research by Michael Middleton as influencing the decision, with a desire to move away from the industrial model of education towards one more in tune with current employer requirements. (Middleton published a body of work beginning in the 1970s regarding wide ranging educational reforms to meet the demands of modern society; for example, see Middleton, 1982) All regrouping principals stated that the structure was positive for meeting student needs - student learning outcomes in particular. All regrouping principals and three regrouping teachers claimed that academic results proved the benefits of the strategy. All four regrouping principals stated that they were happy with the current arrangements, and would continue to regroup. Possible reasons for discontinuing the practice in future included loss of

funding through PSFP (two schools), a change in numbers of teachers and students (one school), staff feeling that the goals were not being achieved (one school) and physical restrictions (one school).

In each of the regrouping schools, keeping the low-achievement classes small in size was a focus. In every case, these schools manipulated the numbers of students in regrouped classes in order to reduce the size of low achievement groups (numbers in each regrouped class are set out in Table 4.1). Note that the numbers supplied for Regrouping School A are approximate, as supplied in the interview with the principal. Low groups ranged in size from eight to 20 students, middle groups from 14 to 28 students, and high groups from 24 to 30 students. Three of the regrouping schools reduced the size of all regrouped classes by utilising additional staff through PSFP funding (such as a teacher/librarian or Support Teacher Learning Assistance). This meant that where there were two home classes in a Stage, three regrouped classes were created for literacy and numeracy lessons. High and middle achievement classes were made deliberately larger than the low groups. High achievement groups in these three schools were more than double the size of the low-achieving groups. The fourth regrouping school reduced the number of students in the low achievement classes by making the middle and high achievement groups larger, without creating an additional class, but the resulting class size difference was much smaller than in the other three regrouping schools. Two regrouping principals and three regrouping teachers stated that the smaller class sizes facilitated in their regrouping format provided benefits for both teachers and students.

Table 4.1 Student numbers in regrouped classes

School	Low Group		Middle Group		High Group	
KLA	Literacy	Numeracy	Literacy	Numeracy	Literacy	Numeracy
Regrouping A	12	12	14	14	28	28
Regrouping B	8	12	23	16	24	27
Regrouping C	14	12	26	28	30	30
Regrouping D	20	20	24	22	25	27
Means	13		21		28	

Allocation of students to literacy and numeracy groups in all regrouping schools was completed on the basis of assessment through a combination of various standardised

tests, school-based and class tasks as well as anecdotal evidence from teacher observations. For most students, this assessment of academic achievement was the sole determinant of group allocation. Two of the schools noted placing students in higher groups than achievement warranted in order to provide positive role models for those students. Three regrouping teachers made comments to the effect that students with behavioural problems were able to be split between teachers and groups more effectively, easing the burden on individual teachers. Parental pressure had caused one school to alter a student's placement. One principal suggested that the ideal situation in regrouped classes was for a student to be placed in the middle achievement groups in Year 3 or 5, and progress to the high achievement groups in Year 4 or 6 (the groups being Stage-based), but agreed that this didn't always happen. Note that this would approximate a streamed situation.

Assignment of teachers to regrouped classes occurred on the basis of choice, special interests or skills, with change encouraged every few years. Having a teacher with literacy and numeracy groups of the same level (for example, both low-achieving groups) was generally avoided. This was seen to be fairer for teachers and less repetitive for students. This comment indicates an awareness that many students were in the same group level for both literacy and numeracy instruction – akin to streaming.

"Sometimes it's a numbers game … we've got to really fit into numbers rather than whether the kids should be in that group or not." (Teacher A, Regrouping School C) Appropriate allocation of students to groups was of concern to one regrouping teacher, who also noted that high achievement group numbers were kept artificially higher in order to keep low achievement groups smaller. This resulted in some students being placed in higher achievement level groups than their actual performance warranted.

Moving students between achievement level groups was noted as a difficulty of the system. One regrouping principal, who stated that this could be difficult to do if all groups were not following a set scope and sequence of content at the same pace (and this seemed unlikely, from the teacher interview responses). One school did not allow movement between groups after a set point in the first school term of each year for this reason, and another noted that most movement occurred early in the school year. One teacher noted that some of the students in her low-achieving group had "… come up

above the kids in the middle group" (Teacher B, Regrouping School C), yet these students had apparently remained in the low group.

Regrouping teachers unanimously felt that the system was beneficial for students, with five teachers claiming this was due to the students being able to work at a level commensurate to their abilities. Only two regrouping teachers interviewed felt that the practice should be reviewed. One of these felt that within-class grouping may be more effective, because KLA integration could then be practised, while the other expressed concerns as to the stigma attached to being in the low groups.

Non-regrouping decisions. There were a number of varying reasons given by schools who had decided not to regroup students. Three of the four principals from non-regrouping schools had made a conscious decision not to regroup; two on the grounds that it would not suit their students (the students needed stability, and/or did not respond well to change), and one owing to preferred organisational and classroom practices. The fourth non-regrouping principal stated that the school's class structure was number driven, and regrouping would be difficult to implement due to insufficient numbers in each stage. All four non-regrouping principals were aware of the practice of regrouping, having experienced it in other schools as long as 30 years ago, but were satisfied with their current organisation of classes. When asked for circumstances which might lead them to implement regrouping, answers were varied. One principal said that an increase in student numbers would be needed to make it viable, two said they would only consider employing it on a limited basis, and then under strict conditions: within stage, with classes in close proximity, with extra staff, and, in one case, only for reading groups as it was thought that this might pacify parents of students in composite classes. Principals in non-regrouping schools noted several considerations when allocating teachers to classes. These included teacher choice, change, student needs and spreading executive teachers across Stages.

The regrouping practice had been experienced by all seven non-regrouping teachers interviewed at some stage in their careers. In some cases it had been implemented for all stages for both literacy and numeracy each day, and in others had been restricted to numeracy or reading only, for as little as an hour per week. Opinions as to the success of the experiences varied. Six non-regrouping teachers felt that having students move

between classes was unsettling and/or time-consuming, two were concerned for the self-esteem of students, and two noted that the lower groups lacked good role models. Stability (three teachers), flexibility (three teachers) and comprehensive familiarity with students' needs (four teachers) were claimed as benefits of non-regrouping. Only the two non-regrouping teachers whose experiences with regrouping had involved minimal time (one hour per week for mathematics or one hour per day for reading) felt that the experience was positive.

Academic Achievement

Grouping Structure

Academic benefits for students were claimed to result from regrouping by all regrouping principals in the interviews. Three of the four claimed that student academic needs were better catered for by regrouping, through either extension or individual learning plans, although this claim was not supported by either teacher interviews or classroom observations. Six regrouping teachers claimed that it was beneficial for students to work with peers of similar achievement level. Three out of four regrouping principals specifically mentioned BST results as evidence of the value regrouping has in relation to academic achievement.

Regrouping principals' statements regarding academic benefits were not supported by the quantitative data. Academic achievement for students from regrouping and non-regrouping schools was compared. BST growth data related to literacy, mathematics and writing were compared for the students in regrouping and non-regrouping schools using independent sample *t*-tests (with Levene's test for equality of variances). The results show no significant difference as shown in Table 4.2.

Table 4.2 Students' growth in academic achievement by grouping structure

	Structure	N	Mean	Std dev.	Sig. (2-tailed)
BST growth in literacy	Regrouping	50	7.29	3.33	.279
	Non-regrouping	68	6.50	4.49	
BST growth in mathematics	Regrouping	51	6.75	5.82	.497
	Non-regrouping	69	7.44	5.25	
BST growth in writing	Regrouping	29	5.38	3.60	.727
	Non-regrouping	47	5.83	6.35	

Group Level

Academic achievement was compared among the different achievement-level groups –
that is, low middle or high groups in regrouping schools, and mixed groups in non-
regrouping schools. In order to do this, student group placement information was
collated. This showed that the majority of students from regrouping schools were
effectively in a streamed situation. Of the 78 students from regrouping schools who
were surveyed, the majority (56 students or approximately 70 per cent) were in the same
achievement group level for English and for mathematics instruction. Seven students
were in a higher group for English than mathematics, and eight in a higher group for
mathematics. In only one identified case was a student placed in achievement groups
which were more than a level apart (that is, the student was in a low group for English
and a high group for mathematics). Seven students had incomplete data in this area,
meaning that the percentage of students in the same group level for both literacy and
mathematics could be greater than 70 per cent. It is important to recognise this, as these
students are effectively in a streamed class for most of the school day, which has
implications for cognitive and affective results. In particular, additional effects on
social relationships may occur for students in low groups for both literacy and
mathematics due to the reduction in the number of students with whom they can interact
in these classes.

Group level placement appeared to be influenced by students' grade levels, with
substantially different numbers of Year 5 and Year 6 students in some groups. These
data are presented in Tables 4.3 and 4.4. Some or all relevant data were missing for
seven students (all from Year 5, and all but one at one school). For the purpose of these
calculations, those students have been omitted. Year 6 students were represented twice
as often as Year 5 students in high achievement groups for mathematics, which is a
significant difference, and also more often (but not significantly different) for literacy.
Year 5 students were more often in the middle groups than Year 6 students for both
subjects. Almost twice the percentage of Year 5 students were in the low literacy
groups than Year 6 students, but that trend was reversed for mathematics. It may be
that this represents a disadvantage of the system for Year 5 students. The differences
were statistically significant for mathematics, but not for literacy.

Table 4.3 Distribution of literacy group level by grade

Grade	Low literacy %	Middle literacy %	High literacy %	Total number of students
Year 5	19	42	39	31
Year 6	10	32	58	41

(chi-sq=3.07, df=2, p=.289)

Table 4.4 Distribution of mathematics group level by grade

Grade	Low mathematics %	Middle mathematics %	High mathematics %	Total number of students
Year 5	9	59	31	32
Year 6	17	20	63	41

(chi-sq=12.27, df=2, p=.002)

Two regrouping principals specifically stated that lower achieving students received the most benefit from the regrouping practice, with three regrouping teachers claiming the practice provided more individual assistance for these students. This would seem to result more from the manipulation of group numbers than from the achievement grouping itself, as the teacher:student ratio in smaller classes makes more time available for the teacher to spend with each student. Three regrouping teachers claimed benefits for higher achievers in terms of the learning pace maintained, and one non-regrouping teacher suggested that gifted students in mixed ability classes could be overlooked whilst the teacher focused on struggling students.

No support was found in the quantitative data for regrouping principal/teacher stated beliefs that regrouping benefited student academic achievement, regardless of the group level. Analysis of variance (incorporating Scheffe's *post hoc* test) applied to BST growth data showed no significant difference in results for either mathematics group level or literacy group level for the regrouped and non-regrouped classes. Non-regrouped students are represented as the "mixed" level. Although not significantly different, low-achieving mathematics students produced a lower mean growth in mathematics achievement than did other groups. Likewise, the mean growth for low-achieving literacy students was lower for literacy than other groups. Further research regarding low achievement groups would be worthwhile, as they are only represented here in small numbers. The results generated by this analysis are shown in Tables 4.5 and 4.6.

Table 4.5 Students' growth in academic achievement (BST) by mathematics group level

	Group level	N	Mean	Std Dev	F	Sig.
Literacy growth	Low	6	7.67	4.07	.78	.538
	Middle	15	6.29	2.59		
	High	24	7.76	3.61		
	Mixed	68	6.50	4.49		
Mathematics growth	Low	6	3.35	5.51	1.39	.248
	Middle	16	7.13	4.15		
	High	24	8.40	6.57		
	Mixed	69	7.44	5.25		
Writing growth	Low	3	6.40	2.04	.07	.976
	Middle	12	5.60	3.20		
	High	8	6.20	5.34		
	Mixed	47	5.37	6.35		

Table 4.6 Students' growth in academic achievement (BST) by literacy group level

	Group level	N	Mean	Std dev.	F	Sig.
Literacy growth	Low	5	4.86	1.68	.94	.424
	Middle	15	7.71	2.99		
	High	25	7.47	3.70		
	Mixed	67	6.53	4.52		
Mathematics growth	Low	5	7.58	4.30	.06	.981
	Middle	16	6.87	3.97		
	High	25	7.52	7.11		
	Mixed	68	7.49	5.28		
Writing growth	Low	3	5.60	1.22	.14	.935
	Middle	9	5.22	2.82		
	High	11	6.57	4.97		
	Mixed	46	5.36	6.42		

Gender Differences

Gender differences related to the regrouping practice were not a noted concern for principals or teachers from any of the eight schools participating in the study. Whilst the issue was not raised directly in the interviews, no principals or teachers from regrouping or non-regrouping schools made mention of any gender-based differences in relation to the effects of the regrouping practice. The only comment regarding gender

was related to one low achievement level group which was made up entirely of boys (due to achievement levels), and their teacher stated that resources were able to be used with the group that were more engaging for boys.

Quantitative results for achievement also showed no difference by gender between the two school groups. Initial analysis of the BST growth data using independent sample t-tests (with Levene's test for equality of variances) in relation to gender alone showed no overall significant difference in means between results achieved by boys and girls, as shown in Table 4.7. When grouping structure was incorporated as a variable, analysis of the BST growth data also showed no significant difference by gender as shown in Tables 4.8 and 4.9. The difference which was closest in significance was that boys in regrouping schools demonstrated considerably less growth in mathematics (but slightly more in literacy and writing).

Table 4.7 Students' growth in academic achievement (BST) by gender

	Gender	N	Mean	Std dev.	Sig. (2-tailed)
Literacy growth	Boys	62	7.14	3.80	.387
	Girls	56	6.49	4.31	
Mathematics growth	Boys	63	6.97	5.49	.708
	Girls	57	7.35	5.53	
Writing growth	Boys	41	5.37	6.21	.757
	Girls	35	5.76	4.47	

Table 4.8 Boys' growth in academic achievement (BST) by grouping structure

	Structure	N	Mean	Std dev.	Sig. (2-tailed)
Literacy growth	Regrouping	27	7.40	2.88	.630
	Non-regrouping	35	6.95	4.41	
Mathematics growth	Regrouping	28	5.69	4.87	.098
	Non-regrouping	35	8.00	5.81	
Writing growth	Regrouping	15	6.05	2.56	.606
	Non-regrouping	26	4.99	7.59	

Table 4.9 Girls' growth in academic achievement (BST) by grouping structure

	Structure	N	Mean	Std dev.	Sig. (2-tailed)
Literacy growth	Regrouping	23	7.16	3.86	.341
	Non-regrouping	33	6.03	4.60	
Mathematics growth	Regrouping	23	8.05	6.69	.438
	Non-regrouping	34	6.88	4.64	
Writing growth	Regrouping	14	5.61	4.55	.869
	Non-regrouping	21	5.87	4.52	

Examination of group makeup in terms of gender demonstrated some differences by gender. Boys were over-represented in the low-achieving groups for both literacy and mathematics, whilst there were similar percentages of each gender in middle groups, with girls dominating the high groups for both subjects. Differences for both literacy and mathematics groups were statistically significant. Tables 4.10 and 4.11 show the distribution of gender by group level for literacy and numeracy respectively. These results have implications regarding academic and affective outcomes for boys. Where students had incomplete data for relevant variables, they were not included in calculations.

Table 4.10 Literacy group level placement by gender

Gender	Low (%)	Middle (%)	High (%)	Total number of students
Boys	24	34	42	38
Girls	3	38	59	34

(chi-sq=6.64, df=2, p=.036)

Table 4.11 Mathematics group level placement by gender

Gender	Low (%)	Middle (%)	High (%)	Total number of students
Boys	21	39.5	39.5	38
Girls	6	34	60	34

(chi-sq=12.27, df=2, p=.002)

Grouping Structure

Non-academic benefits for students arising from the school's organisational structure were claimed by all schools in the study. All regrouping principals claimed benefits of their grouping structure for students which were unrelated to academic achievement. Not surprisingly, all non-regrouping principals claimed non-academic benefits for students in mixed ability classes. Most of these claimed benefits from both school groups related to classroom climate.

Three regrouping principals suggested that having a range of teachers working with children was beneficial, with two stating that students presenting behaviour problems were able to be split between teachers during the day. This idea was supported by one non-regrouping principal and three non-regrouping teachers, who suggested that one disadvantage of mixed ability classes was the possibility of teacher/student clash without respite. By contrast, all non-regrouping principals and five non-regrouping teachers claimed that better rapport between students, parents and teachers was facilitated by mixed ability classes. When regrouping teachers were asked about teacher/student relationships in regrouped classes, two claimed that there was a benefit from getting to know more students across the Stage. However, four regrouping teachers indicated that relationships with students suffered under the regrouping system. They claimed it took them longer to get to know their students as they did not see them all for all KLAs.

Mixing with a larger number of peers was stated as being positive for students by two regrouping principals, and two non-regrouping teachers suggested that mixed ability classes limited student interaction. Three regrouping principals stated that the regrouping practice could be unsettling for some students, whilst all non-regrouping principals mentioned stability as a benefit of mixed achievement classes. Two of these particularly stated that regrouping would not suit their clientele for that reason.

Self-esteem of low-achieving students was raised as a concern by two regrouping principals and two regrouping teachers, but one regrouping teacher suggested that

students gained confidence by working at the right level. One non-regrouping teacher suggested that mixed achievement classes avoided labelling of low achievers, but another suggested that students were able to make this distinction regardless, through within-class grouping. Opportunities for students were raised as another issue. One non-regrouping teacher stated that in mixed achievement classes all students were exposed to the same opportunities. One regrouping teacher said that low achievement groups may not cover all Stage 3 work, but felt that this would probably occur in mixed achievement groups also.

Results regarding student attitudes towards school demonstrated differences on two of the seven Quality of School Life (QSL) scales. QSL results were analysed using independent t-tests (with Levene's test for equality of variances). Statistically significant differences were found between the regrouped and non-regrouped students for the scales of "Teacher" and "Negative Affect" as shown in Table 4.12. In relation to the "Teacher" scale, the results showed that student satisfaction with their relationship with the class teacher was significantly higher in regrouping schools. It is important to note that students in regrouping schools typically have a number of teachers, whilst non-regrouping students have only one. The "Negative Affect" scale results show that a general sense of negativity with life at school was lower in regrouping schools. As is common convention, individual scales are presented first, followed by general scales.

Table 4.12 Student attitudes towards school by grouping structure

	Structure	N	Mean	Std dev.	Sig. (2-tailed)
Teacher	Regrouping	50	3.53	.514	.015
	Non-regrouping	78	3.27	.688	
Opportunity	Regrouping	51	3.67	.327	.106
	Non-regrouping	78	3.55	.476	
Achievement	Regrouping	51	3.55	.405	.114
	Non-regrouping	78	3.40	.576	
Social integration	Regrouping	50	3.34	.489	.345
	Non-regrouping	78	3.25	.611	
Adventure	Regrouping	51	2.92	.677	.254
	Non-regrouping	78	2.77	.697	
General satisfaction	Regrouping	50	3.36	.558	.351
	Non-regrouping	78	3.26	.603	
Negative affect	Regrouping	50	1.38	.390	.002
	Non-regrouping	78	1.69	.698	

Student attitudes towards school were compared to see whether achievement level was a contributing factor. That is, results were compared among students in low, middle, high or mixed groups for each of literacy and numeracy. No significant differences between groups were found, but non-significant differences were shown in lower mean scores for students in low groups. Analysis of variance (incorporating Scheffe's *post hoc* test) performed using the QSL scores, with group levels in mathematics and literacy as variables, produced the results shown in Tables 4.13 and 4.14. The analysis shows that, whilst there is a significant difference between groups overall for the negative affect scale only (non-regrouped classes had a higher sense of negativity), no two groups were significantly different. The small size of some groups will have impacted on this result. Approaching significance are the differences on the teacher (sig. = .077) and social integration (sig. = .078) scales. Mixed and low achievement groups had lower scores on the teacher scale. Low-achieving mathematics students demonstrated had lower satisfaction scores than those in middle or high groups on every scale except for opportunity, and also rated social integration lower than any other groups, but these differences were not statistically significant. The only scale on which students in low achievement groups for both literacy and numeracy demonstrated higher satisfaction than any other groups was related to the level of opportunity they perceived, but again such differences were not significant.

Table 4.13 Student attitudes towards school by mathematics group level

	Group level	N	Mean	Std. Dev.	F	Sig.
Teacher	Low	7	3.30	.68	2.34	.077
	Middle	19	3.50	.50		
	High	24	3.63	.47		
	Mixed	78	3.27	.69		
Opportunity	Low	8	3.85	.16	1.41	.242
	Middle	19	3.60	.37		
	High	24	3.66	.32		
	Mixed	78	3.55	.48		
Achievement	Low	8	3.37	.60	1.23	.302
	Middle	19	3.57	.33		
	High	24	3.60	.38		
	Mixed	78	3.40	.58		
Social integration	Low	7	2.96	.86	2.33	.078
	Middle	19	3.26	.39		
	High	24	3.52	.34		
	Mixed	78	3.25	.61		
Adventure	Low	8	2.77	1.16	.98	.397
	Middle	19	2.81	.52		
	High	24	3.05	.58		
	Mixed	78	2.77	.70		
General satisfaction	Low	7	3.07	1.12	.10	.396
	Middle	19	3.36	.41		
	High	24	3.44	.42		
	Mixed	78	3.26	.60		
Negative affect	Low	7	1.49	.38	2.77	.045
	Middle	19	1.35	.41		
	High	24	1.38	.38		
	Mixed	78	1.69	.70		

Table 4.14 Student attitudes towards school by literacy group level

	Group level	N	Mean	Std Dev	F	Sig.
Teacher	Low	8	3.40	.64	2.02	.115
	Middle	17	3.45	.56		
	High	24	3.62	.44		
	Mixed	77	3.27	.69		
Opportunity	Low	8	3.87	.15	1.50	.217
	Middle	17	3.61	.39		
	High	25	3.63	.30		
	Mixed	77	3.55	.48		
Achievement	Low	8	3.40	.49	.83	.478
	Middle	17	3.49	.39		
	High	25	3.59	.39		
	Mixed	77	3.41	.58		
Social integration	Low	8	3.28	.53	1.81	.148
	Middle	17	3.11	.58		
	High	24	3.50	.33		
	Mixed	77	3.25	.61		
Adventure	Low	8	3.22	.68	1.73	.164
	Middle	17	2.66	.73		
	High	25	2.98	.61		
	Mixed	77	2.79	.69		
General satisfaction	Low	8	3.44	.62	.64	.593
	Middle	17	3.21	.71		
	High	24	3.41	.40		
	Mixed	77	3.27	.60		
Negative affect	Low	8	1.52	.44	2.75	.046
	Middle	17	1.33	.45		
	High	24	1.36	.34		
	Mixed	77	1.68	.70		

Gender Differences

As noted previously, no comments were made by principals or teachers during interviews that related to gender differences and regrouping. The issue was not directly raised by the interview questions.

Quantitative results showed some differences by gender related to attitudes towards school. Analysis of QSL scores by gender using independent sample *t*-tests showed significant differences in relation to student satisfaction with their relationship with the class teacher, feelings of a sense of adventure in learning and general sense of satisfaction with life at school. Results are shown in Table 4.15. For all three aspects, girls' means were significantly higher than boys. These results are consistent with general trends showing that girls tend to have a more favourable view of school life (Ainley & Bourke, 1992; Ireson & Hallam, 2005).

Table 4.15 Gender and attitudes towards school

	Gender	N	Mean	Std dev.	Sig. (2-tailed)
Teacher	Boys	64	3.21	.657	.002
	Girls	64	3.55	.571	
Opportunity	Boys	65	3.54	.426	.128
	Girls	64	3.66	.421	
Achievement	Boys	65	3.39	.548	.108
	Girls	64	3.54	.479	
Social integration	Boys	64	3.24	.543	.329
	Girls	64	3.33	.589	
Adventure	Boys	65	2.60	.703	.000
	Girls	64	3.06	.597	
General satisfaction	Boys	64	3.16	.538	.007
	Girls	64	3.44	.603	
Negative affect	Boys	64	1.56	.533	.869
	Girls	64	1.58	.689	

Analysis of the QSL results by independent sample *t*-tests for each gender between groups showed significant difference for girls only on the "Negative Affect" scale. This showed that girls in regrouping schools had a significantly lower general sense of negativity with life at school (as was found for regrouping students overall). No significant differences were found for boys. These results are shown in tables 4.16 and 4.17.

Table 4.16 Boys' attitudes towards school and grouping structure

	Structure	N	Mean	Std dev.	Sig. (2-tailed)
Teacher	Regrouping	25	3.37	.564	.110
	Non-regrouping	39	3.10	.697	
Opportunity	Regrouping	26	3.63	.337	.135
	Non-regrouping	39	3.48	.471	
Achievement	Regrouping	26	3.48	.388	.263
	Non-regrouping	39	3.33	.630	
Social integration	Regrouping	25	3.28	.579	.613
	Non-regrouping	39	3.21	.524	
Adventure	Regrouping	26	2.71	.686	.339
	Non-regrouping	39	2.54	.714	
General satisfaction	Regrouping	25	3.21	.621	.552
	Non-regrouping	39	3.13	.483	
Negative affect	Regrouping	25	1.40	.419	.057
	Non-regrouping	39	1.66	.577	

Table 4.17 Girls' attitudes towards school and grouping structure

	Structure	N	Mean	Std dev	Sig. (2-tailed)
Teacher	Regrouping	25	3.70	.405	.078
	Non-regrouping	39	3.45	.641	
Opportunity	Regrouping	25	3.71	.320	.462
	Non-regrouping	39	3.63	.477	
Achievement	Regrouping	25	3.62	.418	.251
	Non-regrouping	39	3.48	.512	
Social integration	Regrouping	25	3.41	.380	.362
	Non-regrouping	39	3.29	.692	
Adventure	Regrouping	25	3.14	.605	.435
	Non-regrouping	39	3.01	.595	
General satisfaction	Regrouping	25	3.51	.452	.457
	Non-regrouping	39	3.39	.684	
Negative affect	Regrouping	25	1.36	.365	.019
	Non-regrouping	39	1.72	.807	

Teaching Practices

"I don't know how I'd handle going back to normal teaching." (Teacher A, Regrouping School C)

Time Management

Time was raised as an issue by some teachers and principals, despite no questions directly relating to time being asked in interviews. Comments relating to time came from principals and teachers in both regrouping and non-regrouping schools during questions relating to perceived advantages and disadvantages of the two grouping structures as well as workload.

Loss of teaching time due to regrouping (students must move between classrooms) was mentioned by one regrouping principal, one regrouping teacher and one non-regrouping teacher. Two non-regrouping principals viewed mixed ability classes as providing more flexibility in use of teaching time. This viewpoint was echoed by two regrouping and one non-regrouping teacher.

Time was also mentioned by teachers in relation to workload for student assessment and compiling school reports. Five regrouping teachers claimed that programming and preparation was less time consuming due to having a narrower range of students to cater for in regrouped classes. Three regrouping teachers stated that there was more work involved in compiling students' school reports, particularly as they had to contribute to the reports of all students they taught, not just the home class. One regrouping teacher (who taught smaller groups) contradicted this view, stating that less time was involved in reporting.

All regrouping teachers claimed that programming was easier due to the smaller range of achievement levels that needed to be catered for. Three non-regrouping teachers stated that a disadvantage of mixed achievement classes was having to program and access resources for a wide range of students.

Intellectual Quality

Intellectual quality is noted as an issue in this study, arising in relation to classroom practices and mentioned in interviews although no question addressed it directly. Two regrouping principals stated that high order thinking or intellectual quality was recognised as an area of need in their teaching programs. An additional regrouping principal voiced concern that there may be low expectations for lower achievement students. One regrouping teacher (who taught the high-achieving groups) mentioned incorporating Bloom's taxonomy in teaching, whilst three non-regrouping teachers claimed to employ it. Bloom's taxonomy is a hierarchy of cognitive processes (Bloom, 1956) often employed by teachers to ensure that classroom activities incorporate higher order thinking. Intellectual quality was not a specific focus of classroom observations. However, it can be said that, generally, no observations conflicted with teacher comments.

Teacher interviews demonstrated differences applicable to this area. The language used in relation to high achievement groups included terms such as "challenge", "expectations", "quality work" , "independent research" and "extension", whereas discussion of low-achieving groups more often included terms such as "remember", "slower pace" and "remediation". Reference was made to those in low groups "missing the basic concepts" (Teacher A, Regrouping School B), yet at that time these students had been in regrouped classes for at least two years. Such comments indicate differences in teacher attitudes related to the group levels, and are suggestive of teaching approaches likely to differ in intellectual quality. Curricular content was similarly indicated, with one teacher discussing the school's scope and sequence of outcomes in relation to a low-achieving group: "I just delete them because I won't get them all done." (Teacher B, Regrouping School C)

A substantial percentage of lessons (just under 40 per cent) in both regrouped and non-regrouped classes incorporated the use of worksheets for the student exploration phase of the lessons. Copies of the worksheets were not collected by the researcher in all cases, making it difficult to ascertain the extent of high order thinking the activities required of the students. The majority of these worksheets were commercially produced, rather than teacher-made. Some reading tasks incorporated the use of

comprehension questions at the evaluative level (considered high order) of thinking, and this was common to both school types.

Structured Interaction

Regrouping appeared to affect the way structured interaction was used in classrooms. Interview data suggested that teachers were more inclined to use teacher-centred methods with low-achieving groups, with the belief that low-achieving students were not skilled at working independently.

According to interview data, within-class grouping was a teaching strategy that four out of eight regrouping and four out of seven non-regrouping teachers claimed to use. Within the regrouped classes, this was done for guided reading by four teachers, and for mathematics by two of those teachers. Only two of the guided reading groups were achievement-based, with all other groups being social groups, or organised for behaviour management. One teacher did not use groups as there were only eight students in the whole class. For the non-regrouping teachers, five claimed to use achievement grouping in literacy and two of those also stated that they used group work in mathematics (only one of these specified that it was achievement grouping). Two of these non-regrouping teachers also mentioned using peer tutoring in literacy and numeracy.

Classroom observations showed that regrouping teachers used whole-class interaction more often in literacy lessons and small-group work less often in literacy lessons than their non-regrouping counterparts. In numeracy lessons, regrouping teachers used whole-class teaching less, and small-group (not organised by ability) work more than non-regrouping teachers. For other KLAs, non-regrouping teachers used both whole-class and small-group interactions more often. These findings are summarised in Table 4.18, which shows the percentages of lessons which employed whole-class and/or small-group tasks for different KLAs, by school group.

Table 4.18 Observations of structured interaction

School group	Literacy lessons		Numeracy lessons		Misc. lessons		Total lessons
	Whole-class	Small-group	Whole-class	Small-group	Whole-class	Small-group	
Regrouping	49%	15%	20%	5%	10%	3%	39
Non-regrouping	23%	23%	38%	0%	15%	7%	13

Knowledge Integration

The effectiveness of knowledge integration was widely acknowledged in both school groups. All four regrouping and three non-regrouping principals stated an expectation that integration of KLAs should occur in all classrooms, whilst one regrouping principal suggested that this could be difficult to achieve within the regrouped structure. Three regrouping teachers confirmed this opinion, mentioning difficulties with KLA integration in regrouped classes, with one claiming this to be a disadvantage of the system for students, as skills were learnt in isolation. One stated that such integration was possible, but would require a great deal of whole-school planning. In one regrouping school where teachers did try to integrate, it sometimes occurred that a teacher would present a task in a "home" class which had previously been completed by some students in a literacy group. Two regrouping teachers said that they did not incorporate any literacy or numeracy activities outside the set regrouping times, whilst four stated that literacy activities occurred incidentally, such as reading or writing in lessons from the Human Society and its Environment curriculum area.

Three non-regrouping principals claimed that the practice of KLA integration was enabled by mixed ability classes, due to staying in one room with one teacher for all lessons. Five out of seven non-regrouping teachers claimed to always integrate other KLAs in their English programs, and one did so some of the time. Observations showed that only one out of seven regrouped classrooms and one out of three non-regrouped classrooms observed were conducting progams integrated across most KLAs. One regrouped teacher claimed that creativity in teaching had been adversely affected by the system, which would seem applicable to the concept of KLA integration. Teaching and learning activities seen to be interesting and valuable by the teacher did

not always fit easily into the prescribed format of regrouped classes which has a clear focus on one KLA at a time.

In summary, whilst principals generally expected and supported integration of KLAs, regrouping teachers found that regrouping made this difficult and most did not implement it. This limitation was also found to limit the level of creativity and engagement of teaching/learning activities. By contrast, most teachers of mixed-achievement classes did claim teach an integrated curriculum, though classroom observations did not always confirm this.

Differentiation

The topic of differentiation of teaching/learning activities was not raised in interview questions with principals, but one regrouping principal voiced a concern that teachers in regrouped classes may teach to the group level and neglect the range of students present within the group.

Two regrouping teachers commented that regrouped classes still contained a range of students, but that the reduced range was easier to cater for. One of these teachers claimed to differentiate the curriculum, but what they described did not fit the definition of differentiation as described in the literature review, as it only related to one special needs student with respect to relaying task instructions. One regrouping teacher, however, stated that no differentiation was necessary as the students "should all be at the same level" (Regrouping School C, Teacher A). Interestingly, this teacher had students working on different spelling lists, so perhaps was speaking only in relation to direct teaching. Two regrouped classes stated that they used levelled readers in literacy classes, which indicates some differentiation in resources, unless all students in the class were using the same level of text at any given time (as seemed to be the case from interview and observation data). One regrouping teacher had different levels operating within the class for spelling which represented individualised programs. One regrouping teacher claimed to incorporate multiple intelligences in their teaching program. Observations in regrouping classes showed no differentiation of instruction. From the 39 lessons observed, eight tasks set for students could be described as "open-ended" – that is, students were able to complete them to varying standards. In two

mathematics lessons different textbooks were used in the same classroom: one for Year 5 students and another for Year 6 students, due to the stage-based nature of the class.

Non-regrouping teachers described a variety of strategies used to cater for the range of needs in their classes. While six out of seven used within-class grouping, five reported spending more of their time supporting the students at a lower achievement level, and two used the teacher's aide for this. Three provided extension tasks for those more capable, five modified tasks to cater for differences and two used peer tutoring. In three cases, groups of students were removed from the classes for remedial (two classes) and/or extension (two classes) work. One non-regrouping teacher stated that they used multiple intelligence activities in their program, which may be considered as a type of differentiation depending on the classroom organisation of these. Observations in non-regrouped classes showed that of the 13 lessons observed, three included differentiation of tasks according to academic level, two included open-ended tasks, and one presented a choice in activities. This is a higher rate of differentiation than in the regrouped classes, but a larger sample would be required before conclusions could be made.

Flexibility

Flexibility was mentioned by a number of teachers, with a general consensus that it suffered in regrouped classes. Three regrouping teachers noted lack of flexibility as a disadvantage of regrouping, as learning times were required to be so structured. Teachers noted that they were unable to continue with a task or to catch up later in the day, because the students would have moved to another group. Flexibility was mentioned by two non-regrouping principals and three non-regrouping teachers as a benefit of mixed achievement classes. The timetables in regrouping schools dictated a strong focus on literacy and numeracy, which meant that some regrouping teachers noted that they were struggling to complete work in other KLAs.

Resources

Some differences in the use of resources may be related to regrouping, and these differences appear to be related to teacher expectations of students in different groups.

For literacy classes, three regrouping teachers (two low and one high achievement class) mentioned using levelled readers, as did two non-regrouping teachers. One regrouping teacher used community texts (low achievement class) and one used school magazines (high achievement class). One teacher suggested that her high literacy group mostly worked with non-fiction texts because "That's where these kids are going" (Teacher A, regrouping School B).

In numeracy, three regrouping teachers (low and middle achievement groups) used computer programs, as did two non-regrouping teachers. Three regrouping teachers (low achievement groups) used hands on activities, as did five non-regrouping teachers.

As noted earlier, a large number of lessons incorporated the use of commercially produced worksheets, but this was common to both school groups.

Other Factors Encountered as Related to Regrouping

Transition to high school was aided by regrouping, according to three regrouping principals and three regrouping teachers, who suggested that it helped familiarise students with moving between classrooms and teachers for set lessons.

Overall assessment of students was claimed by three non-regrouping principals and four non-regrouping teachers to be better in mixed ability classes, as the teachers observed student performance across all KLAs.

Treatment of regrouped students as being of a single achievement level was raised as an issue in a number of ways during interviews. As mentioned above, one regrouping teacher stated that all students in regrouped classes were "at the same level" (Regrouping School C, Teacher A). As noted previously, all regrouping teachers found programming easier with regrouping as they were only attempting to suit one level. One regrouping principal stated that teachers liked regrouping because of the reduced range of student achievement. Two regrouping teachers stated that they didn't know if they would be able to go back to mixed ability teaching. Two regrouping teachers explicitly stated that regrouping made teaching easier.

Regrouping principals were asked whether teachers had received training related to teaching regrouped classes. No principals had knowledge of such training. Two did not know as they had come to the school after the system had been implemented. It is likely that a number of current staff had also arrived at the school after the practice was initially introduced, so for at least some (and possibly all) staff, no explicit training in teaching achievement-based classes had been provided. All principals mentioned ongoing professional development, particularly in the area of literacy, related to such topics as assessment, high order thinking and levelling texts.

Summary

Schools had a range of reasons for their decisions to form either mixed achievement or regrouped classes. Regrouping schools placed most emphasis for their decisions on student achievement, whilst non-regrouping schools cited affective concerns about students. Regrouping schools did make exceptions when allocating students to groups based on achievement. Such exceptions occurred for behavioural reasons, or to manipulate group numbers in order to keep low-achieving groups small.

School and home class were shown not to be significant factors in this study. The results obtained showed that the regrouping structure did not impact on student academic achievement, as measured by BST growth data. Likewise, no effect on academic achievement was found when students' achievement group level was considered. No differences by gender were found in relation to academic achievement, although boys were found to be over-represented in low achievement groups.

Student attitudes towards school were found to be impacted by the regrouping structure, with students in regrouping schools exhibiting higher satisfaction with their relationship with the class teacher, though this effect requires further investigation as the instrument used was not designed for use with students who had multiple teachers. Students' general sense of negativity with life at school was lower in regrouping schools. Achievement group level was not found to affect attitudes towards school.

Differences by gender were found in relation to some aspects of students' attitudes toward school, and this is consistent with previous research in primary schools generally, and apparently not related to the grouping structure used.

Teachers in regrouping classes tended to see their students as being of the same level, or close to it, and this perception affected teaching practices. Regrouping teachers tended not to differentiate resources or tasks to suit differences in student achievement levels, even in cases where students were allocated to a group for behavioural reasons, and were known to have lower achievement than the group they were in. Differentiation was also not common in non-regrouping schools. Regrouping prevented most teachers in these schools from integrating KLAs, and those few who did try found it problematic to do so. However, it was also found that few non-regrouping classes integrated KLAs to any substantial degree. Higher order thinking tasks were identified as lacking in some low achievement regrouped classes.

Principals and teachers were generally satisfied with the organisational structure in which they worked, with the exception of one regrouping teacher who felt that other pedagogical practices may better meet student needs. Regrouping was found to make teaching easier.

We now move to a discussion of these results in relation to the existing literature and the questions which drove this study.

CHAPTER 5

EVALUATION OF THE REGROUPING STRATEGY

Introduction

The practice of grouping students in varying ways for various purposes is long standing and well established. It can be done for practical or strategic reasons. Grouping based on prior achievement has a long and problematic history. Whilst research has shown this practice to be beneficial for some students under specific conditions, it is equally shown to have negative effects for other students. That many schools continue to use achievement grouping under a range of conditions, despite the research findings, demonstrates the need for continuing research in this area. As outlined in previous chapters, this study was designed to determine the effects of regrouping (a form of achievement grouping) for literacy and numeracy lessons on the performance and attitudes of Australian primary students. A mixed method study was employed in order to provide comprehensive data. Hence, results from student tests and surveys, principal and teacher interviews and classroom observations were collected, and analyses of these were presented in the previous chapter. In this chapter, a brief summary of results will be presented, and then those results will be discussed in relation to the research questions and the existing literature, as presented in Chapter 2. Limitations of the study will be discussed, and implications for further research considered. Finally, conclusions based on the research are presented.

Summary of Results

The results presented in Chapter 4 show that regrouping does, indeed, have notable effects on a number of aspects of schooling. These effects, however, may not be in the areas targeted by schools in their employment of the strategy, nor are they always in areas which are easily measured. The first effect is in the organisation of classes, with additional deliberations necessary where regrouping is instituted. Despite the schools' reasons for implementing regrouping, considerations for allocating students to the groups included information other than attainment levels. In terms of student academic achievement for literacy, numeracy or writing, no significant difference was found relating to the employment of the regrouping practice, despite this being the

predominant argument for use of the strategy presented by principals of regrouping schools. This absence of academic effect was consistent to students of both genders and all achievement levels. However, students in regrouping schools had more positive attitudes on two of seven scales examined concerning their perceptions as to the quality of their school life. Regrouping students demonstrated higher satisfaction in their relationships with teachers and an overall lower sense of negativity with life at school. Achievement group level did not impact significantly on these results, and differences by gender were as expected in any school in that girls had more positive attitudes than boys on a number of scales. Teacher attitudes were found to be affected by the regrouping structure. Regrouping teachers were more likely to view all students in a regrouped class as being of the same attainment level, and this impacted on classroom practices. Teachers of regrouped classes were less likely than their non-regrouping colleagues to differentiate tasks or resources for their students, as they considered all students to be working at the same level. Regrouping teachers found it easier to teach under this arrangement, as they found there was less work involved in programming and preparation, although some described an increase in work related to compiling student reports. Integration of KLAs was found to be problematic in regrouped classes, with few regrouping teachers attempting this teaching strategy. Some of the conditions for successful employment of the regrouping strategy as outlined in earlier research (Slavin, 1987), such as fluid movement between groups and accurate allocation of students to groups, were found to be problematic by some regrouping schools and were therefore not part of their grouping strategy.

Discussion of Results

Decisions About Regrouping

The decision to implement or maintain the regrouping practice predominantly arose from a perception that it would benefit student academic achievement. This was despite an overall lack of supporting research evidence (Slavin, 1987; Ireson & Hallam, 1999) and supports the statement by Hallam, et al. (2003) that there is a general assumption that achievement grouping leads to improved academic outcomes. As will be discussed in following paragraphs, this perception is not supported by the results in this study. The decision of all regrouping schools to make low achievement groups smaller than

higher level groups also demonstrates a perception that class size impacts on student outcomes. Whilst this is supported by some of the literature (Glass & Smith, 1978; Cooper, 1989; Finn & Achilles, 1999; Nye et al., 2000), it should be noted that few groups in the current study were reduced sufficiently for the group size alone to produce any substantial benefit according to much of the research. Results from project STAR suggested that differences would be seen for classes with fewer than 20 pupils (Finn, et al., 2003), whilst Blatchford and Mortimore (1994) also recommended an upper limit of 20 students per class, and 15 was the class size studied in the SAGE program (Molnar, et al., 1999). While the smallest classes in the current study were those for low-achieving students, only the low achievement groups and some of the middle achievement groups in this study had class sizes lower than 20 students. Also, much of the more recent research stating that reduced class sizes are beneficial acknowledges that this benefit operates mostly for the earliest years of schooling (Finn & Achilles, 1990; Finn, et al., 2001; Goldstein & Blatchford, 1998; Mosteller, 1995; Nye, et al., 2000), whilst this study related to students in Years 3-6 of primary school.

All regrouping schools allocated students to groups based on performance over a range of tasks, as well as teacher observation. This selection process was modified at times by a range of variables such as the desire to keep low achievement class numbers small in size, to separate disruptive students or provide good role models for difficult students. The resulting inaccurate (according to attainment) placement of students can be counterproductive and inequitable for some students (Charlton, et al., 2007; Hallam & Ireson, 2007), and indicates an inherent problem with achievement grouping. That these regrouping schools are willing to take other criteria into consideration when organising achievement-based groups illustrates the complexity of school education as both an instructional process and a social construct. There is clear recognition that appropriate instruction alone will not facilitate learning – social aspects of the situation must also be conducive to learning if optimal results are to be obtained. The processes involved in organising, facilitating and monitoring achievement-based groups effectively are time consuming, as noted by researchers such as Davies et al. (2003). In addition to accuracy of placement, this has an effect on flexibility of groups, with little movement between groups found to occur after initial placement in this study and in others (MacIntyre & Ireson, 2002; Hallam & Ireson, 2006; Hallam & Ireson, 2007).

Once assigned to a group, students are most likely to remain there for the duration of the school year.

Another factor impacting on lack of movement between groups is the fear that moving a student to a lower group (sometimes necessary to maintain group numbers if a student were to move up) would impact negatively on that student's self-concept. Interestingly, no comments were made on the possible impact on students left in a group even if their performance may warrant being moved to a higher group. Although the literature is not clear in relation to self-concept and achievement grouping, with some researchers (for example Liu et al., 2005) claiming that low-achieving students are negatively affected, and others (such as Kulik & Kulik, 1982) claiming that no significant effect occurs, it is not surprising that some teachers (and parents) are concerned about this. Relevant results from this study are discussed in a later section. The over-representation of males found in low achievement groups within this study is consistent with general trends (Rowe, 1999 cited in Rowe, 2003, p. 12), but may present further difficulties for male students in terms of compounding effects. Given that low-achieving groups may be exposed to a more restricted range of teaching practices (Boaler et al., 2000; Wiliam & Bartholomew, 2004) and curriculum (Sorensen & Hallinan, 1986), with lower teacher expectations (Rosenthal & Jacobson, 1968), these boys, and indeed all students consigned to low achievement groups, may well be further disadvantaged. This is especially relevant for the Stage 3 students in this study whose proximity to high school will be increasing their susceptibility to status level effects on motivation and performance (Gamoran, 1986). Placement in such structured groups provides students with cues as to their present worth and future opportunities (Gamoran, 1986), and may limit student efforts, further compounding societal and educational divides.

That Year 5 students are under-represented in stage-based high achievement groups is not surprising, given that they have been exposed to 12 months less schooling and therefore syllabus content than their Year 6 classmates. However, this placement may impact negatively on these students, in the same way it was described for low-achieving boys. The suggestion made by one regrouping principal that a model situation occurs when a student is in the middle achieving groups in their first year of a two year stage and the high groups in their second year raises a similar issue. The rationale for using Stage-based classes in these situations is questionable as the outcome would equate to

grade based, streamed classes. This was seen to be true for the majority of students in the current study, with around 70 per cent of students found to be in the same level of regrouped classes for both literacy and numeracy. Effectively these students are in streamed classes for most of the day – a system so thoroughly criticised by Jackson (1964) and others (Ansalone & Biafora, 2004; Kulik & Kulik, 1982; Oakes, 1985; Slavin, 1987). Comments in teacher interviews demonstrate that teachers are aware of this, yet none seemed to find it problematic.

Whilst all regrouping schools intended continuing the practice at the time of interview, they were all aware that conditions may arise which would necessitate changing the arrangement. It is not surprising that a reduction in funding was cited as a reason to consider dropping their regrouping practice, as resources are of concern in most schools (Burns & Mason, 1995; Burns & Mason, 1998; Greenwald, Hedges & Laine, 1996). What is surprising is that no principals mentioned unsatisfactory student achievement levels as a possible consideration for changing their practice. Likewise, none suggested that research findings might cause a change. Either they were completely confident that regrouping did (and would continue to) produce better results than would mixed achievement classes, or they had other reasons for wanting to continue the practice, such as ease of teaching (Hallam & Ireson, 2003; Hallam & Ireson, 2005). One might suggest that the schools utilising additional staff to make the regrouped classes smaller could simply create smaller mixed achievement classes to maintain their academic results, but the fact is that schools are prohibited from using PSFP funding to directly reduce class sizes. Regrouping may be a way of circumventing these restrictions, at least for parts of the school day. That said, there are schools which employ the regrouping strategy which do not attract PSFP funding, so we return to the *perception* that achievement grouping facilitates improved academic achievement (Hallam, et al., 2003) as well as ease of teaching (Hallam & Ireson, 2003).

Non-regrouping schools presented less rigid views. Reasons against the practice related more to affective than academic considerations, although the current study did not find any support for such concerns. All teachers and principals interviewed had experienced regrouping in various forms, and all principals remained open to implementing it, albeit under specific conditions, although few teachers were in favour. These staff raised points relating to traits of different school populations, time-management, flexibility of

teaching, and self-esteem of students, demonstrating some awareness of the complexity of the issue (Hallam & Ireson, 2003). It is possible that if increased accountability in relation to student academic achievement gains importance (the new National Assessment Program may factor in such a change) similar to conditions reported in the UK (Hallam, et al., 2003: Hallam, Ireson & Davies, 2004a, 2004b), more schools may be influenced to adopt strategies which are seen by various stakeholders to improve academic performance, at the cost of principals' and teachers' affective concerns, and without the backing of research findings.

Academic Achievement

As outlined in the review of the literature, between-class achievement grouping has previously been found not to affect overall academic outcomes (Kulik & Kulik, 1982; Slavin, 1987). The results obtained in this study are consistent with these findings, as no difference in academic achievement was found between school groups in results for literacy, numeracy or writing. However, these results did not support other findings of those researchers which claimed academic benefits in the case of some specific achievement grouping strategies.

The regrouping practice investigated here is quite similar to Joplin Plan programs found by Slavin (1987) to be beneficial. Conditions considered necessary for this were that: the regrouping occurred for no more than two subjects, with students grouped heterogeneously for most of the day, the regrouping reduced heterogeneity significantly for a particular skill area, student allocation was reassessed regularly, and instruction tailored to the students' skill needs. Compromising any one (or a combination) of these conditions may have led to the lack of result found in the current study. With literacy and numeracy sessions taking up substantial portions of the teaching day, students are with a mixed achievement group for only a small portion of the day. Regrouping has students assigned to one literacy and one numeracy group, yet there are a number of content areas within each of these where students' skill levels may vary. It is unlikely that in mathematics, for example, a student would be performing at the same level in strands of number, space, data and so on. This may also mean that teachers who perceive a group of students to be of a similar achievement level do not adequately differentiate instruction when teaching different skill areas. Logic alone tells us that it

is not possible for a group of 30 students from a pool of 70 (as found in Regrouping School C) to be all at the same achievement level in any case. Differentiation will be discussed in greater detail later in the chapter. As also stated in the results, student movement between groups was found to be minimal in the schools investigated, so that whilst, at surface level, the regrouping strategy resembles Joplin Plan programs, the conditions deemed by Slavin (1987) as necessary for benefits to occur are largely absent in current practice.

Kulik and Kulik (1982) found that programs for gifted and talented students provided academic benefit, but the regrouping practice seen in this study did not cater specifically for gifted and talented students. This is apparent in the ratio of students allocated to high-achieving groups. With high achievement groups made larger to allow for smaller groups at the lower levels, over one third of students were often allocated to the top groups – not a valid gifted and talented grouping method. Teachers of high-achieving groups did not consider their students to be gifted and talented, and therefore did not claim to implement teaching programs that would suit such students. This lack of provision for gifted and talented students seen in the regrouping schools studied may be a flaw of the structure. As noted, high-achieving groups were in all cases comparatively large, so that a wide range of student achievement must be present, but at the same time these schools would probably not consider special accommodations for gifted and talented students necessary, as they are already grouping by achievement.

The practice of reducing class size for low-achieving students was discussed earlier in the chapter in relation to organisation of classes. Research findings on its effect on academic outcomes are also relevant in this section. Results from this study contrast with the research claiming that reduced class sizes produce academic benefits for students (Glass & Smith, 1978; Cooper, 1989; Nye et al., 2000), but do not discount that benefits of small classes may be experienced by students in the early years of schooling (Finn & Achilles, 1990; Finn, et al., 2001; Goldstein & Blatchford, 1998; Mosteller, 1995; Nye, et al., 2000). Although the regrouped students in this study were only in smaller classes for literacy and mathematics lessons, rather than for the whole school day, the results could be expected here as assessment in these subjects was used to determine academic achievement. Factors mediating any benefits of either regrouping or class size may include reduced teaching time (due to moving classes), reduced

teacher knowledge of individual student needs, lack of differentiation due to the perceived homogeneity of the regrouped classes and a reduction in the range of teaching strategies employed in achievement-based classes (Hallam & Ireson, 2005). As was indicated by Wright et al. (1997), the level of heterogeneity of achievement in a class is not a predictor of either teacher effectiveness or further student attainment. It may be that teaching practices were not altered to benefit from the reduction in class size (Shapson, et al., 1980), or that other contextual differences between schools affected results (Goldstein & Blatchford, 1998).

Student Attitudes

As noted in Chapter 3, Quality of School Life (QSL) data for regrouping schools was only obtained from two schools, with one of those providing 86 per cent of the data. Whilst analysis of variance did not show differences between specific schools, all results pertaining to student attitudes toward school must be considered in light of this limitation, as the possibility for skewed results exists.

The results of this study show that student satisfaction with their relationship with the class teacher was significantly higher in regrouping schools and that general sense of negativity with life at school was lower in regrouping schools, which appears to contrast with previous research indicating that student attitudes were not affected by the type of grouping arrangement employed (Hallam, et al., 2004b). There are a number of possible reasons for this effect. Students in regrouping schools may enjoy better relationships with teachers for reasons relating to class size, less teacher stress, or feeling that teachers better meet their needs through teaching programs suited to their achievement level. By contrast, teachers in mixed achievement classes may have less time for individual students, be less supportive due to workload, or not cater sufficiently for a range of needs in their teaching programs. However, it should also be considered that factors other than the regrouping practice itself may have produced the difference in attitude found here.

In terms of student/teacher relationships, it may be that possibly fractious relationships between some teachers and students are diluted by having a range of teachers each day, as suggested in some teacher interviews. This is in line with findings by Hallam et al.

(2004b) that students perceive working with a variety of teachers and students to be an advantage of setting. One way to examine this result further would be to have different teachers deliver different subject content whilst maintaining mixed achievement classes, and compare affective results with schools where each class has only one teacher. Also, the instrument used may not have suited the context of regrouping schools. The instrument may need to be adjusted to allow for student responses regarding a range of teachers in the case of regrouping schools in order to obtain more valid results. Another possibility is the suggestion by Veldman and Sanford (1984) that teachers of classes with a wide range of student achievement levels may not address students' affective needs as well as in classes with more homogeneity. These teachers may have less time and attention available for relating to students on a more personal level, and can be seen as "businesslike" (Evertson, Sanford & Emmer, 1981, p. 229) by students. Support for this hypothesis may be seen in the fact that teachers in this study and others considered teaching to be easier in achievement-based classes (Hallam, et al., 2004a). Another possibility is that the reduction in size of most regrouped classes has allowed for improved student-teacher relationships, as teachers suggested in research by Blatchford, Edmonds, et al. (2003) and Molnar et al. (1999). Likewise, teachers may be happier in smaller classes, as suggested by several researchers (including Cooper, 1999; Molnar, et al., 1999; Moriarty, Edmonds, Blatchford & Martin, 2001), and this may result in improved relationships with students. The reason for the difference in result for attitudes towards teachers is beyond the scope of the current study, but it may be that the observed differences in student-teacher relationships are not a direct result of the regrouping strategy.

Student/student relationships were not found to be affected by regrouping, as measured by the social integration scale of the QSL. This is surprising given the manipulation of student interaction brought to bear by the practice. Regrouping restricts the social interactions and relationships of students as described by Hallinan and Sorensen (1985). Whilst the success of such grouping practices for students' academic progress are seen to rely, in part, on the fluid movement of students between groups, such movement would be expected to impact negatively on students' social relationships through disruption to group cohesion. It may be that there is in fact a very low incidence of such movement between groups (one regrouping school did not move students at all after term one), explaining the lack of difference shown in this study. Also, the fact that a

high percentage of students were found to be in the same level group for both literacy and numeracy placed them with mostly the same students for the majority, if not all, of the day. Whilst this has negative implications for some aspects of schooling (as it is almost a streaming situation) it may be positive for the establishment and maintenance of inter-student relationships.

In regard to negative affect, the range of teachers may again be relevant. Likewise the smaller class size employed for most regrouped classes may account for the difference in negative affect, as reduced class sizes can lead to improved student attitudes (Smith & Glass, 1980; Cooper, 1989) and may also have resulted in improved teacher/student relationships. Given that the majority of the data pertaining to student attitudes in regrouping schools came from a single school, it is also possible that a particularly positive school ethos in this case has skewed results. Whilst it was anticipated that regrouping may have a negative effect on self-concept (especially for students in low groups) as found by Liu et al. (2005), the difference found in the current study was not significant. This may be due to the effect of within-group comparisons overriding between-group comparisons (MacIntyre & Ireson, 2002), or the previously noted moderating effect of positive school ethos (Hallam, et al., 2004b). Research incorporating a larger data pool may clarify this area.

No other aspects measured by the QSL instrument were affected by the regrouping strategy. Attitudes found not to be affected related to: general satisfaction, social integration, opportunity, achievement and adventure. From the review of the literature, differences could have been expected in some of these areas, so it is necessary to consider why these were not present. The general satisfaction results may have shown differences if students were dissatisfied with group placements, as found by Boaler et al., (2000) and Hallam and Ireson (2007). Social integration results may have shown differences if student relationships were adversely affected by moving between different groups for KLAs, as suggested by Hallinan and Sorensen's (1985) research, but none were found. Results on the opportunity scale may have shown student dissatisfaction with the restrictions placed on them by the regrouping practice through a limited curriculum and teaching practices in achievement-based groups as found by various researchers (including Boaler et al., 2000; Wiliam & Bartholomew, 2004), but this was not the case. Likewise, if students perceived their achievement to be limited in any way

by regrouping, as suggested by Boaler et al. (2000) and MacIntyre and Ireson (2002), differences on that scale could have been apparent, but were not. Whilst some of the research suggesting such disadvantages occur in achievement-based classes was conducted in secondary schools, primary students have demonstrated sophistication of awareness in relation to grouping practices (Filby & Barnett, 1982; Hallam, et al., 2004b) and future prospects (Gamoran, 1986). It would be expected from reviewing the literature that in all these cases students in low achievement groups would have been affected more than others (Ireson & Hallam, 2005; Van Houtte, 2004; Veldman & Sandford, 1984). Differences by achievement group placement are discussed later in this chapter.

Gender Differences

No differences were found by gender in relation to gains in academic achievement in this study. Whilst it is not uncommon for girls to obtain higher academic achievement results in primary school, this effect may have been mitigated here by the use of BST growth data which accounts for prior attainment to an extent, as difference in results over only a two year period are used as the measure in this study. The only differences by gender found in this study were those that would be expected in any school (Ainley & Bourke, 1992), such as the higher results for girls on a number of QSL scales as outlined in the previous chapter. This suggests that neither girls nor boys were affected differently by the regrouping strategy, in contrast to studies by other researchers which found various differences in effect (including Boaler, 1997b; Wiliam & Bartholomew, 2004; Hallam & Ireson, 2007). It may be that the instrument used to determine student attitudes towards school was not effective in accommodating the contextual differences in the systems studied here, or that other school or class effects acted to neutralise those effects in this case. This must be considered given that the majority of QSL data came from a single regrouping school.

Effects Related to Group Level

Academic achievement. Achievement group level was not found to impact significantly on gains in academic achievement in this study. This is in contrast to some of the previous research which suggested that higher achieving students benefited from

homogenous grouping, whilst lower achieving students were disadvantaged by it (Jackson, 1964; Lou, et al., 1996; Venkatakrishnan & Wiliam, 2003; Wiliam & Bartholomew, 2004). In this study, academic growth means in regrouped schools were lower for low-achieving students in both literacy and numeracy classes, but differences were not statistically significant. A larger sample may yield different results. Alternately, the lack of definitive difference shown here may be due to the fact that low achievement groups were deliberately smaller in the schools studied, as has been found previously (Akerhielm, 1995), with some low achievement groups in the current study having as few as eight students. This provided the low groups with some of the benefits of within-class small-grouping. Resources and tasks could be designed to better suit student needs, as the level of homogeneity would most likely be greater due to the small number of students involved (Lou et al, 1996). Benefits related to small class size described by Finn and Achilles (1990), Finn et al. (2001), Nye et al. (2000) and Mosteller (1995) may also have influenced the findings. As noted in the results section, most low achievement groups were less than half the size of the high achievement groups. Conversely, the high achievement groups which have been found to benefit in other studies may have been disadvantaged in this case by having some students allocated to them purely in order to keep the numbers in low-achieving groups reduced, without the students being at an appropriate level of attainment. High achievement groups in this study had between 24 and 30 students.

Alteration of teaching practices (to be discussed later in this chapter) and loss of time due to movement in regrouped classes may also have prevented advantages previously found for high achievement groups. In many cases, improvement for high-achieving students has been linked to enrichment programs (Kulik & Kulik, 1992), and that does not accurately describe the high achievement groups observed in this study. Levelled groups in this study may also have been differently affected by teacher expectations. Whilst some generalisations have been made by researchers in regard to this, it has also been found that individual teachers are more or less likely to exhibit such differentiated expectations (Brophy & Good, 1974, cited in Weinstein, Marshall, Brattesani & Middlestadt, 1982, p.680; Rubie-Davies, 2004 cited in Rubie-Davies, 2007, p.291), and such determinations were not within the scope of this study.

A further consideration is the finding by Lou et al. (1996) that differences in academic achievement are diminished when standardised tests are used, as was the case in this study. School based tests may have produced different results, but these would have been difficult to compare accurately between schools, given that different schools (and indeed classes – especially in regrouping schools) are likely to have covered different aspects of the curriculum at any given time, and the tests would vary in terms of the demands made of students.

Student attitudes toward school. Student attitudes towards school were not significantly affected by achievement group level in this study. This was true for all QSL scales. However, whilst not significantly different, low-achieving mathematics students reported lower satisfaction in relation to social integration than students in middle or high groups. The impact of regrouping on the self-concept of students allocated to low achievement groups has been seen to be a concern in some previous research (Hallam, et al., 2006) and also by some teachers in this study. Although the study did not attempt to measure self-concept directly, some reflection of this would be expected to be shown through the QSL results (Ireson & Hallam, 2005), for example, in the negative affect scale, but this was not the case. Likewise, findings of dissatisfaction related to grouping by Boaler et al. (2000) were not reflected here. It may be the case that students are reflecting their teachers' attitudes, as was found to be common in Hallam and Ireson's (2006) study, or that other factors such as strong social support within the school have mitigated such effects (Hallam, et al., 2004). It is also possible that positive effects related to smaller group sizes counteracted any negative effects.

Although QSL results did not demonstrate significant differences on the social integration scale, further investigation would be worthwhile. It must be considered that regrouping may affect the type of relationships between students, if not the quality of those relationships. Hallinan and Sorensen (1986) suggested that achievement grouping facilitated stratified relationship patterns, especially for students who remained in the same groups for even small parts of the day. The current study found that approximately 70 per cent of regrouped students were in the same level group for both literacy and numeracy, placing them in the same group of students for at least two thirds of the teaching day (as previously noted, almost streamed classes) in most cases. Because low achievement groups in all regrouping schools were deliberately smaller in

size than the higher groups, these students also had a smaller pool from which to select their friends. It seems reasonable to assume that this manifestation of the schools' class organisation practices may affect social cohesion at the grade or school level, despite the lack of significant difference determined in this study. A study involving an increase in sample size of low-achieving students would be useful.

One aspect of the QSL where low-achieving literacy and mathematics students had higher means than any other group was that related to opportunity. Again, whilst not a significant result in this study, further investigation with a larger sample, and supported by qualitative data, may yield interesting results. These students may be reflecting teacher attitudes, as found in previous research (Hallam & Ireson, 2006; Hallam et al., 2004b) or may feel that they are provided with work at a level suited to their development.

Teacher Attitudes

Teacher attitudes were found to be affected by the between-class grouping structure employed by the schools, as has been the case in other studies (including Hallam & Ireson, 2003). This was evident in comments related to their relationships with the students and their teaching practices (the latter will be discussed in the following section). In terms of their relationships with students, it was clear that some of the regrouping teachers felt that they had less knowledge of the "whole student" within regrouped classes, and that rapport was slower to develop. This may be detrimental for students, as research has consistently shown that positive student-teacher relationships are linked to academic achievement (Burchinal, et al., 2002; Hamre & Pianta, 2001; Ladd, et al., 1999; O'Connor & McCartney, 2007; Pianta & Stuhlman, 2004; Wentzel & Caldwell, 1997). Teachers who know their students well are able to design programs tailored to students' needs based on prior achievement, background knowledge, preferred learning styles and interests.

Differences in teacher attitudes which were demonstrated by regrouping teachers in their language use are also of concern. The terminology used in relation to high-achieving students was notably different to that for low-achieving students, and demonstrates differential teacher expectation as described by Rosenthal and Jacobsen

(1968). These attitudes are likely to affect teaching practices, as will be discussed in the following section, and place limitations on the progress of low-achieving students.

The majority of regrouping teachers in the study preferred teaching regrouped classes as they felt it was easier in terms of planning and catering for the range of achievement levels in the classes, which supports findings by Hallam and Ireson (2003). Whilst ease of teaching may not be seen as a valid goal of any educational strategy, it should not be dismissed automatically. The difficulty and workload attached to a teacher's job has been found to affect relationships with students (Pollard, et al., 1991), and is also connected to teacher morale. This has an indirect effect on children's self esteem and therefore attainment (Lawrence, 1996).

Classroom Practices

Classroom practices were found to be affected by the grouping structure used. Regrouping teachers stated a clear belief that the students in each class, regardless of the number of students included, represented a homogenous achievement level. This belief led them to conclude that no within-class differentiation was needed as to teaching method, resource or task. Similar attitudes were seen in earlier research by Charlton et al. (2007). This also supports the findings of Hallam and Ireson (2005) who stated that grouping structures affected teaching practices, although they noted that many mixed achievement classes also lacked differentiation, and this was likewise reflected in several classes in the current study. All classes, regardless of configuration, consist of a range of students so that differentiation is appropriate. Therefore, the reduction in the use of differentiation which between-class achievement grouping may lead to is of concern. All groups of students, no matter how low the number of members, consist of a number of individuals, and therefore a range of achievement and various other characteristics (Boaler, 1997). This is particularly pertinent in the case of middle and high achievement groups which are made artificially large in size to allow low achievement groups to be smaller. Some of the high-achieving groups in this study contained between 24 and 30 students, which in some cases represented almost half the total stage cohort. It is obvious that in one half, one third or even one quarter of a school's Stage 3 population there will be a range of achievement, as well as a range of other student variables which could not be adequately addressed without differentiation.

To begin with, Stage-based classes regularly accommodate students with an age range extending over three years or more. When reduced class sizes are coupled with regrouped classes, the picture becomes even more complex.

Whilst some studies report increased individualisation of learning support in smaller classes (Blatchford, et al., 2002) this may not be transferable to regrouped classes where students are seen to be of homogeneous achievement level, and this appears to be the case in the current study. Likewise, whilst smaller classes may be considered to facilitate teacher knowledge of individuals' needs (Blatchford, et al., 2002), this effect may be counteracted in regrouped classes by the fact that students have different teachers for different KLAs. In either case, these findings support the literature recommending careful school planning and inservice training in conjunction with initiatives related to both achievement grouping (Wright, et al., 1997) and class size (Slavin, 1989; Blatchford & Mortimore, 1994; Hanushek, 1999; Molnar et al., 1999).

In addition to a lack of differentiation, regrouping was found to inhibit the employment of KLA integration. Curriculum integration is an effective and efficient method of programming, as evidenced by its inclusion in the quality teaching model (Ladwig & King, 2003). It is of concern that few teachers in this study from either school group incorporated this practice to any notable extent. Findings by McNess et al. (2003) that a focus on performance can limit teacher creativity are supported by the current study. It is clear that many regrouping teachers felt constrained by the practice of regrouping, both in relation to KLA integration and general flexibility, but increased stage-based planning and communication could circumvent some of these difficulties. Perhaps hardest to overcome would be the restrictions on spontaneity, flexibility and creativity as found by Pollard et al, (1991) and echoed by some teachers in this study. The additional planning and collaborating needed to improve the effectiveness of regrouping would not work to facilitate these qualities.

Teachers would be less likely to repeat integrated work with groups if there were less reliance on commercially produced worksheets (which also tend to have a "one-size-fits-all" application and are also not conducive for KLA integration, either). The regular use of such worksheets was found to be common in non-regrouping schools also. That a high proportion of teachers observed in this study appeared to use

reproduced worksheets as a matter of course is a concern. Are the current demands of primary teaching such that insufficient time and/or energy are available for teachers to devise learning activities best suited to the teaching/learning context?

Teacher attitudes towards students in regrouped classes were shown in this study to be different depending on the achievement level of the class. Low-achieving students were seen to have different needs from those in high-achieving classes, as evidenced by the language used in relation to these classes, as described on page 85. In many cases this language related directly to classroom pedagogical practice, as in the case of "remediation", for example. This evidence supports other interview and observation data in this study and others, suggesting that teaching/learning activities in low achievement classes are often lacking in intellectual quality (Hallam & Ireson, 2003, 2005; Charlton, et al., 2007), which has been shown to be of particular benefit to disadvantaged students (Newmann, et al., 2001).

Groupwork was also shown to be affected by regrouping, with most small groups in regrouped classes being formed for social or behavioural reasons. The small class size often employed with low-achieving students seems also to have contributed to a lack of groupwork for those students. Some regrouping teachers considered that low-achieving students were unable to work independently so that teacher-centred lessons were favoured, as had been described in earlier research by Haskins et al. (1983). This again denies low-achieving students the opportunities to develop important skills.

Implications for Practice

As this study found little evidence to support the use of the regrouping strategy for literacy and numeracy in primary schools, especially in the area of academic achievement targeted by the regrouping schools, it would seem that the time and effort involved in assessing, grouping, reporting and facilitating the physical movement of students between groups could be better spent. This is especially true given that, although most regrouped classes had the additional advantage of reduced class sizes, they still showed no academic advantage. Alternatively, it might be argued that, as there are also no negative academic results determined by the study, the practice should be continued as it makes the teacher's job easier. This is a valid point, but the prime

concern of education is with students, not teachers, and reduced class size alone has been shown elsewhere to improve both teacher and student attitudes.

In terms of affective results, if the positive difference found in this study could be replicated elsewhere, there might well exist a case for regrouping. Such results might also warrant further investigation into having older primary students taught parts of the curriculum by different teachers.

Observations made in this study suggest that students in regrouping and non-regrouping schools alike may benefit from improved teaching practices such as increased use of differentiation and KLA integration. Currently, regrouping schools spend considerable time facilitating the regrouped classes, and some also use the resource of additional staff members. These resources may be better used in providing professional development for teachers to improve classroom practice. A successful example of such a program is the TAP project outlined by Linchevski and Kutscher (1998), where weekly workshops allowed teachers to reflect on their teaching and assisted them in the development of useful strategies and tools. As Wright et al. (1997) suggested, the first step in improving attainment for students is to improve the effectiveness of teachers.

What is clear is the complexity of relationships that exist where the grouping of students is concerned (Venkatakrishnan & Wiliam, 2003), and the need for decisions regarding this to be carefully considered and practices monitored. Hallam and Ireson (2003) stressed the need to be aware of weaknesses in different organisational systems in order to address them. They suggested that mixed achievement classes required "high quality differentiated materials … to reward effort rather than attainment … success in all activities … to be valued … and … treat all groups with equal respect" (Hallam & Ireson, 2003, p. 355). Others researching the impact of achievement grouping have promoted the consideration of alternate, flexible forms of teaching and learning to better meet student needs. Modular and/or personalised instructional systems have been suggested by Hallam and Ireson (2007) as an alternative. Terwel (2005) recommended the use of "collaborative and adaptive arrangements" (p. 667) with a focus on learning styles and cooperative strategies to replace tracking. At the most basic level, teachers need training in effective strategies for teaching mixed-achievement classes (Ansalone & Biafora; Wiliam & Bartholomew, 2004).

A number of the problems highlighted in relation to classroom practice, whether in homogeneous or heterogeneous classes, may be overcome by teachers working together to develop solutions, teaching programs and improve professional knowledge. Ireson and Hallam (1999) noted the need for teachers to be freed from classroom responsibilities in order to observe each other's teaching and work collaboratively. Increasing primary teachers' classroom release time would be critical in implementing this.

<p style="text-align:center">Limitations of the regrouping study</p>

The study was conducted using a small number of schools, all in the same geographical area and mostly of similar size. Some individual schools were over-represented in some aspects of the data. For example, only two of the four regrouping schools contributed QSL data, with a single school providing approximately 86 per cent, and only three non-regrouping classrooms of a possible eight providing the observation data. Observations were limited in duration to only one day per classroom, and so can not be deemed to represent the full range of daily occurrences. The design of the interview questions, whilst mostly open to avoid leading the subjects, may have led to omissions by some respondents. As noted, the QSL instrument used to measure student attitudes towards school may not have adequately catered for the specificities of regrouping schools.

Another difference between the two groups of schools which may have impacted on the results obtained is the general organisation of classes. As noted in Chapter 3, all regrouping schools employed Stage-based classes, whereas three out of four control schools had year-based classes. A comparison between a Stage-based school group and a year-based school group (both without regrouping) would be needed to determine whether this difference may have affected the results in this study. Likewise, having students rotate among teaching staff may have contributed to effects.

Implications for Further Research

It is imperative to find out why so many principals and teachers hold the view that achievement grouping will benefit student achievement when there is no substantial research to support this belief. Teacher beliefs and perceptions may provide insight on how achievement grouping has maintained its presence in education systems (Ansalone & Biafora, 2004). Do these beliefs stem from the teachers' experiences during their own schooling? What is the influence, if any, of preservice teacher programs on such beliefs? Or do the opinions arise from inservice experiences?

Further investigation is required as to why attitudes of regrouped students may be less negative in general, as well as why they seem more positive in regard to teachers. Also warranted is further investigation into differences (both positive and negative) on some measures of student attitudes to school life for low-achieving students Focus group interviews may shed some light on this issue. It would be interesting to interview students who have experienced both types of schools for information as to what they did or didn't like about both systems. More specific research into the social effects of regrouping, particularly for low-achieving students, is also indicated, given that they suffer from both stratification and reduced social interaction within classes.

Teacher reliance on commercially-produced teaching resources (worksheets in particular) is worthy of study. Few would argue that this is an effective teaching practice, and the full extent of this problem may be difficult to uncover – many teachers may underestimate their use. Are primary teachers so overworked that they cannot devise alternate activities? Is the situation any different in high schools where teachers have fewer face-to-face hours? Is it a product of teacher stress or even teacher burnout? Are the teachers aware of the limitations such tasks place on student learning?

An area of interest which arose as a marginal issue in this study is the use of Stage-based classes. Research into this area is desirable as it has become widespread practice, again without a strong research base, and impacts on various aspects of schooling including organisation of classes and teaching practices.

Conclusion

The current study, whilst showing no detrimental effects for regrouping in terms of either academic outcomes using the BST growth results as a measure, or student attitudes towards school as measured by the QSL instrument likewise found little evidence in its support.

It is concerning that schools continue to implement practices not grounded in research. Whilst preservice teaching courses generally incorporate research-based practice into their programs, it may be that this emphasis dissipates at school level. That may be due to the fact that current school principals, who are ultimately responsible for school based decisions, completed their training at a time when there was a different focus. As it is known that teachers are influenced by their own experiences as learners, perhaps some principals (and teachers) are replicating, to some extent, their own schooling. Perhaps teachers find the demands of teaching mixed achievement primary classes overwhelming, and prefer what is manageable to what is proven to be beneficial for students. Principals may prefer to maintain existing practices (Ansalone & Biafora, 2004) rather than add pressure to teachers' workloads by instigating structural change. In any case, it is imperative that sufficient inservice professional learning occurs to convince current practitioners of the value of practice which has a strong base in research.

There is perhaps a case for governments to be more prescriptive in determining school and classroom practices. Arguments against this would no doubt be forceful, and rightly so. Teachers have experienced relative autonomy in most classrooms, with this seen as positive for staff and students, and they are unlikely to be receptive to increased demands from government bodies. The other problem is that government departments also do not always ground their decisions in research-based evidence, as shown in the promotion of setting in British primary schools.

It appears that Jackson's (1964) assumption that the values which led society to implement streaming in education would resurface in different ways should that system cease was somewhat prophetic. The use of regrouped or setted classes has been shown to have many problems (prevalent but not inherent) identical to those identified in

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streaming (Boaler, et al., 2000). Inaccurate and inappropriate allocation of students to groups, lack of flexibility, differentiated learning opportunities and expectations are of no less concern now than they were at the time of Jackson's study, so schools with a serious intention to improve student achievement through regrouping must address these issues. Whilst such problems may be difficult to avoid, they are surely not impossible to overcome, and schools choosing to follow the practice must endeavour to find solutions.

It would seem preferable that educational systems endeavour to find ways to meet the needs of students and teachers which do not involve achievement grouping. The most pronounced differences between regrouping and non-regrouping schools were in the attitudes of teachers. Preservice and inservice teacher education which supports teachers in developing positive classroom relationships and high quality learning experiences which promote success for all students is essential. Recent promotion of the Quality Teaching model in NSW is an example of this, but may not impact at the level of hierarchy in schools which can adequately influence change.

As suggested by Jackson (1964), it may be that our societal and therefore educational values must be reassessed before major improvements in educational practices are able to be made. Jackson's suggestion that the practice of achievement grouping stems from inherent societal values explains why it has been so firmly entrenched in education systems. Society's focus on measuring achievement may be ultimately responsible for the persistence of achievement grouping. This focus has led to the "performative culture" in British primary schools described by Troman (2008, p. 620), and educators in many other countries would no doubt recognise the condition. Comprehensive structural change is only likely to occur with changes in society's "perception of ability and effort" (Ansalone & Biafora, 2004, p. 257), and when such change is supported by all educational stakeholders. Current educators may not be able to change society's values in the short term, but I argue that they must continue in these efforts.

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APPENDICES

THE UNIVERSITY OF NEWCASTLE
School of Education

PRIMARY SCHOOL LIFE

*We would like to know how you feel about your life in primary school. **This is not a test**, and there are no right or wrong answers. What we want is your opinion, so try to answer what you think about your school life. Your answers will not be seen by anyone else.*

First of all, would you please answer these questions:

Name of Your School? _____
Your Class? _____   Boy or Girl? _____

*Each statement on these two pages starts with MY SCHOOL IS A PLACE WHERE ... some particular thing happens to you or you feel a particular way. You should give your opinion by ticking one of the boxes in each line to show that you **Agree**, **Mostly Agree**, **Mostly Disagree** or **Disagree** with the statement.*

Try to give an answer to every statement but, if you really cannot decide, leave that one out.

*Don't forget that you have to think of **My School is a Place Where...** before each item for it to make sense, for example, **My School is a Place Where ... I feel important**.*

(Tick one box in each line)

MY SCHOOL IS A PLACE WHERE ...	Agree	Mostly Agree	Mostly Disagree	Disagree
1. I really like to go each day.	☐	☐	☐	☐
2. my teacher is fair to me.	☐	☐	☐	☐
3. I learn to get along with other people.	☐	☐	☐	☐
4. I am a success as a student.	☐	☐	☐	☐
5. I feel unhappy.	☐	☐	☐	☐
6. other students accept me as I am.	☐	☐	☐	☐
7. I know how to cope with the work.	☐	☐	☐	☐
8. I like to be.	☐	☐	☐	☐
9. the work is a good preparation for my future.	☐	☐	☐	☐
10. I like to do extra work.	☐	☐	☐	☐
11. I feel happy.	☐	☐	☐	☐
12. the things I learn are important to me.	☐	☐	☐	☐
13. learning is fun.	☐	☐	☐	☐
14. I feel lonely.	☐	☐	☐	☐
15. things I learn will help me in secondary school.	☐	☐	☐	☐

(Tick one box in each line)

MY SCHOOL IS A PLACE WHERE ...	Agree	Mostly Agree	Mostly Disagree	Disagree
16. I am good at school work.	☐	☐	☐	☐
17. I feel proud to be a student.	☐	☐	☐	☐
18. I feel worried.	☐	☐	☐	☐
19. my teacher takes an interest in helping me with my work.	☐	☐	☐	☐
20. people trust me.	☐	☐	☐	☐
21. I have a lot of fun.	☐	☐	☐	☐
22. my teacher listens to what I say.	☐	☐	☐	☐
23. I enjoy what I do in class.	☐	☐	☐	☐
24. I am popular with other students.	☐	☐	☐	☐
25. I can learn what I need to know.	☐	☐	☐	☐
26. I know I can keep up with the work.	☐	☐	☐	☐
27. I get excited about the work we do.	☐	☐	☐	☐
28. I get upset.	☐	☐	☐	☐
29. I know people think a lot of me.	☐	☐	☐	☐
30. I get on well with the other students in my class.	☐	☐	☐	☐
31. what I learn will be useful.	☐	☐	☐	☐
32. the work we do is interesting.	☐	☐	☐	☐
33. I get enjoyment from being there.	☐	☐	☐	☐
34. my teacher helps me to do my best.	☐	☐	☐	☐
35. people can depend on me.	☐	☐	☐	☐
36. other students are very friendly.	☐	☐	☐	☐
37. I feel restless.	☐	☐	☐	☐
38. my teacher treats me fairly in class.	☐	☐	☐	☐
39. what I learn will be useful to me when I leave school.	☐	☐	☐	☐
40. I achieve a satisfactory standard in my work.	☐	☐	☐	☐

If you want to tell us anything else about your life at school, please write it here.

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CODING SHEET FOR QSL PRIMARY

There are seven scales in all that comprise the 40-item Quality of School Life (QSL) questionnaire - five specific scales and two general scales.

SPECIFIC QSL SCALES

Teacher scale: student satisfaction with their relationship with the class teacher
Items: i2, i19, i22, i34, i38

Opportunity scale: a belief in the relevance of schooling - a future oriented scale Items: i9, i12, i15, i25, i31, i39

Achievement scale: student sense of being successful in school work
Items: i4, i7, i16, i26, i40

Social integration scale: student satisfaction with peer group relationships
Items: i3, i6, i20, i24, i29, i30, i35, i36

Adventure scale: student feelings of a sense of adventure in learning
Items: i10, i13, i23, i27, i32

GENERAL QSL SCALES

General satisfaction scale: a general sense of satisfaction with life at school
Items: i1, i8, i11, i17, i21, i33

Negative affect scale: a general sense of negativity with life at school
Items: i5, i14, i18, i28, i37

Appendix C: Interview Questions for Principals in Regrouping Schools

Participant background data
Please provide the following information:
Sex: Male /Female (please circle)
Age: 30-40 yrs   40-50 yrs   50-60 yrs   60yrs+ (please circle)
Number of years in the teaching profession:
Qualifications:

The following items are intended to provide background information about the implementation of regrouping for literacy and numeracy within your school. Please answer as thoroughly as possible.

NB. The term "regrouping" is used in this questionnaire to describe the practice of reorganising pupils into separately streamed classes for literacy and numeracy so that students are in three different classes (literacy, numeracy and "home").

1. When did your school begin regrouping for literacy and numeracy?
2. Who made the decision to implement regrouping?
3. How did the decision come about?
4. Was there a period of consultation prior to the implementation? If so, who was consulted, and what issues were discussed?
5. Were teachers given any specific training prior to the implementation of regrouping? If so, what was the duration and content of the training?
6. Please explain how the regrouping works:
    a) When are literacy, numeracy and "home" classes held?
    b) Who is involved in each of these?
7. Are regrouped classes the same size as "home" classes? If not, where does the extra staff come from?
8. How were students assigned to the regrouped classes?
9. How were teachers assigned to the regrouped classes?
10. How were teachers assigned to "home" classes?
11. How were students assigned to "home" classes?
12. How is programming managed for literacy and numeracy? Is it a joint effort, or are teachers responsible for programming for their own groups?
13. How are resources managed?
14. Do you perceive regrouping to be effective for literacy/numeracy lessons? If so, in what ways?   If not, why not?
15. Do you perceive particular benefits for students? If so, what?
16. Do you perceive particular disadvantages for students? If so, what?
17. Do you perceive particular benefits for teachers? If so, what?
18. Do you perceive particular disadvantages for teachers? If so, what?
19. Do you feel that regrouping impacts on social relationships within the school in any way? If so, please describe.
20. In what ways are you monitoring the effects of regrouping?
21. Have you changed anything about the way regrouping is implemented since its inception? Please give details.
22. Do you intend to continue using regrouping? Why/why not?

23. What would be possible reasons for discontinuing the practice?
24. Is there anything you would like to add on this topic?
25. Do you give permission for the interviewer to contact you in future should a follow up to this interview be required?

Thank you for your participation.

Appendix D: Interview Questions for Principals in Non-regrouping Schools

Participant background data
Please provide the following information:
Sex: Male /Female (please circle)
Age: 30-40 yrs   40-50 yrs   50-60 yrs   60yrs+ (please circle)
Number of years in the teaching profession:
Qualifications:

The following items are intended to provide background information about the teaching of literacy and numeracy within your school. Please answer as thoroughly as possible.

NB. The term "regrouping" is used in this questionnaire to describe the practice of reorganising pupils into separately streamed classes for literacy and numeracy so that students are in three different classes (literacy, numeracy and "home").

1. At this school classes remain together, with one teacher for all KLAs (apart from RFF). Was this a conscious decision? If so, why?
2. Please describe any experience you have had with regrouping (when and where it occurred, and its success or lack of).
3. How are teachers assigned to classes in your school?
4. How are students assigned to classes in your school?
5. Have you ever considered regrouping students, based on ability, for literacy and/or numeracy? Why/why not?
6. What do you see as the advantages and/or disadvantages of having classes remain constant?
   a) Advantages for students
   b) Disadvantages for students
   c) Advantages for teachers
   d) Disadvantages for teachers
7. Under what circumstances might you decide to implement regrouping?
8. In this school, is programming for literacy/numeracy a group effort, or are teachers responsible for programming for their own class?
9. Do you have any special literacy or numeracy programs operating? If so, what do these involve?
10. How are resources for literacy and numeracy managed?
11. Is there anything you would like to add on this topic?
12. Do you give permission for the interviewer to contact you in future should a follow-up to this interview be required?

Thank you for your participation.

Appendix E: Interview Questions for Teachers in Regrouping Schools

Participant background data
Please provide the following information:
Sex: Male /Female (please circle)
Age: 20-30yrs   30-40 yrs   40-50 yrs   50-60 yrs   60yrs+ (please circle)
Total number of actual years you have been teaching:
Qualifications:

The following items are intended to provide background information about the practice of regrouping for literacy and numeracy within your school. Please answer as thoroughly as possible.

NB. The term "regrouping" is used in this questionnaire to describe the practice of reorganising pupils into separately streamed classes for literacy and numeracy so that students are in three different classes (literacy, numeracy and "home").

1. How long have you been involved in teaching regrouped classes?
2. What were your initial thoughts about this arrangement?
3. Has your attitude changed? How and why/why not?
4. What advantages and/or disadvantages do you feel regrouping has:
   Advantages for students?
   Disadvantages for students?
   Advantages for teachers?
   Disadvantages for teachers?
5. Has regrouping affected your relationships with students? If so, in what way?
6. Has regrouping affected your workload? If so, in what way?
7. Do you program for literacy and numeracy with other teachers of your stage, or independently for your groups?
8. Which literacy class do you teach (eg. Low, middle or high ability)?
9. Which numeracy class do you teach?
10. How does teaching regrouped classes differ from teaching a stable class?
11. What teaching methods do you use in literacy?
12. What teaching methods do you use in numeracy?
13. Do you differentiate materials or activities in any way to cater for varying student needs within the class? If so, how?
14. Does the practice of regrouping affect teaching in your "home" class? Please describe.
15. What programs/resources do you use?
16. Do you incorporate additional literacy and/or numeracy activities with your "home" class? Why/why not? Please describe.
17. In the last 2 years, have you changed anything about the way you teach literacy and/or numeracy? Why and how?
18. Is there anything you would like to add about this topic?
19. Do you agree to be contacted should further information be required regarding your answers?

Thank you for your participation.

Appendix F: Interview Questions for Teachers in Non-regrouping Schools

Participant background data
Please provide the following information:
Sex: Male /Female (please circle)
Age: 20-30yrs   30-40 yrs   40-50 yrs   50-60 yrs   60yrs+ (please circle)
Total number of actual years you have been teaching:
Qualifications:

The following items are intended to provide background information about the teaching of literacy and numeracy within your school. Please answer as thoroughly as possible.

NB. The term "regrouping" is used in this questionnaire to describe the practice of reorganising pupils into separately streamed classes for literacy and numeracy so that students are in three different classes (literacy, numeracy and "home").

1. How do you cater for the range of literacy and numeracy needs in your classroom?
   Do you feel this is effective?
   Why/why not?
2. Do you feel there are other ways differences could be better catered for?
   If so, please describe.
3. Have you had any experience with the regrouping of students for literacy and/or numeracy classes? Please describe (when, where, success?).
4. If so, what were your impressions about this practice?
5. What do you see as the advantages or disadvantages in having students remain with the same class and teacher for all KLAs:
   Advantages for students?
   Disadvantages for students?
   Advantages for teachers?
   Disadvantages for teachers?
6. Do you program for literacy and numeracy with other teachers of your stage, or independently for your class?
7. What teaching methods do you use in literacy?
8. What teaching methods do you use in numeracy?
9. Do you integrate KLAs in your program? Please describe.
10. What programs/resources do you use?
11. In the last 2 years, have you changed anything about the way you teach literacy and/or numeracy? Why and how?
12. Is there anything you would like to add about this topic?
13. If not already covered, please describe when and how you use groupwork in your classroom (activities, formation of groups).
14. Do you agree to be contacted should further information be required regarding your answers?

Thank you for your participation

Appendix G: Classroom Observations Pro Forma

SCHOOL CODE:
TEACHER CODE:
DATE:
LESSON KLA: LESSON TOPIC:

LESSON PHASE	TIME STARTED	TIME FINISHED
Introduction		
Direct teaching		
Student exploration		
Closure		

ORGANISED INTERACTION	
RESOURCES	
DIFFERENTIATION	
INTEGRATION OF KLAs	