

Boys in school and society

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WHAT THIS PAPER IS ABOUT

Gender issues in education have been at the forefront of interest for parents, schools, education authorities and researchers in recent years. In the past decade there has been a growing perception in Australia that girls have become more successful pursuing their educational goals than boys. This has been especially notable in educational outcomes relating to literacy and to measures of participation in various subject types and retention rates for students in the last years of secondary education. There has also been a relationship noted between post-school destinations and successes of Australian students and their gender.

This situation emerged following an emphasis in the 1980s on the education of girls and particularly encouraging girls into, what were then, non-traditional areas such as the physical sciences, advanced level mathematics and technology subjects. More recently, the concern for boys' education and development was raised because they were over represented in areas such as remedial education and had higher levels of behavioural problems, while at the same time being under represented in the study of subjects such as fine arts, foreign languages and literature. The expression, "but what about the boys?" became common in schools amongst those aware of the problem.

This paper arises from aspects of the ACER research program developed in response to a request from the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA). The paper draws upon a range of ACER and other Australian research.

The paper focuses on students' achievement and attitudes to school, as well as behaviours, how those aspects of learning are related for boys and girls, and the influences that shape different outcomes for boys and girls. Consideration is also given to the broader social development of boys and how schools contribute to that development. Each of these perspectives is important to understanding the development of boys through schooling and the difference in educational outcomes for boys and girls.

Research from the ACER program, and a range of other research in Australia and overseas, has highlighted important differences in educational outcomes for girls and boys. At primary level boys (on average) have significantly lower levels of achievement in literacy than their female counterparts. In mathematics there appears to be no significant difference in the achievement of boys and girls at either primary school or early secondary school. In fact, on the basis of

international studies in which ACER has participated, Australia appears to be one of the few countries in which the difference between boys and girls in mathematics achievement is negligible. In most countries, the achievement of boys in mathematics is higher than that of girls. At secondary school level boys are more likely than girls to leave school before completing Year 12, and average scores on end-of-school assessments are lower for boys than for girls. In the final years of secondary school, differences between girls and boys in subject choice still appear to follow patterns established over past years.

Beyond school, a smaller percentage of boys than girls progress to higher education, although a larger proportion of boys participate in vocational education and training programs. In addition there is evidence from a range of studies that boys regard their school experience less favourably than girls and are less strongly engaged in the work of schools. The paper also provides a glimpse of some other issues of the place that boys have in society when they leave school.

There is a discussion of the implications of the research and some possible strategies for schools, teachers, education authorities and parents to use.

INTRODUCTION

There is a body of evidence to support the notion that boys experience less success than girls throughout their primary and secondary education (Masters & Forster, 1997a,b; Rowe, 2000a; Slade, 2002). The evidence actually suggests that there is a widening gap between the academic performances of girls and boys in Australia, as well as in English speaking countries world-wide (McGaw, 1996; Rowe, 2000b; West, 1999). Compared with girls, findings from the emerging evidence-based research consistently indicate:

- boys are significantly more 'disengaged' with schooling and more likely to be at 'risk' of academic underachievement – especially in literacy (Browne & Fletcher, 1995);
- boys exhibit significantly greater externalising behaviour problems in the classroom and at home – i.e., anti-social, inattention, restlessness (Barkley, 1996; Collins *et al.*, 1996; Rowe & Hill, 1998);
- in the early years of schooling, boys constitute between 75–85 per cent of those children (usually in Grades 1 or 2) identified 'at-risk' of poor achievement progress in literacy, and selected for participation in a Reading Recovery intervention program (Rowe, 1999a, 2000c);
- boys report significantly less positive experiences of schooling in terms of enjoyment of school, perceived curriculum usefulness and teacher responsiveness (Rowe & Rowe, 1999);

- boys are more likely to 'drop out' of schooling prematurely. Recent Australian national estimates indicate that between 1994 and 1998, 30 per cent of boys failed to complete their secondary schooling (cf. 20 per cent of girls – Marks *et al.*, 2000). This results in reduced employment opportunities and general quality of life chances;
- boys are subject to more disciplinary actions during schooling (including bullying behaviours and expulsions), are more likely to participate in subsequent delinquent behaviours, alcohol and substance abuse, and during adolescence, are 4–5 times more likely than girls to suffer from depression and commit suicide (Collins et al., 1996; Zubrick *et al.*, 1997, Sawyer *et al.*, 2000);
- fifty per cent of consultations to paediatricians at tertiary referral hospitals relate to behavioural problems, including Attention-Deficit Disorder (ADD) and Attention-Deficit/Hyperactivity Disorder (AD/HD), with a ratio of boys 9: girls 1. Further, 20 per cent of referrals relate to learning difficulties – being made up of predominantly boys demonstrating poor achievement progress in literacy (Rowe & Rowe, 2000a); and
- boys have a higher prevalence of auditory processing problems. Unless appropriate classroom management strategies are put in place, these problems impact negatively on their early literacy achievement and subsequent progress, as well as their behaviours (Rowe, Pollard, Tan & Rowe, 2000; Rowe & Rowe, 2000a).

LITERACY

It is apparent that the achievement of fundamental literacy and numeracy skills in early childhood and early schooling are strongly correlated with successful educational outcomes in later years (Ainley *et al.*, 1998). The difference between boys' and girls' success becomes greater as they progress through the primary school years.

National literacy benchmarks have been established by the Commonwealth and State Governments. The results from the National School English Literacy Survey which was conducted in Australia in 1996 indicated that males consistently performed worse than females on the literacy benchmarks in primary schools. Masters and Forster (1997b) reported that the mean literacy achievements of females was higher than that of males at Years 3 and 5 and the differences were greater for writing and speaking than for reading. Males were more likely to be among the bottom performers, less likely to be among the top performers and had a lower average literacy level than females.

The National Report on Schooling in Australia (MCEETYA, 2000) reported similar results for data collected in 1999, with 89.7 per cent of females in Year 3 achieving the benchmark compared to 84.9 per cent of males – this is represented in Figure 1.

Pattern of development

Consistent with a growing body of research, findings from a longitudinal study of factors affecting students' progress indicated large differences



Figure 1 Percentage of students reaching national literacy benchmarks at Year 3.

Source: National Report on Schooling in Australia, Preliminary Paper 1999 Year 3 Reading National Benchmark Results.

between male and female students on all key factors affecting their learning outcomes (Rowe & Hill, 1996, 1998). That is, girls had significantly higher levels of achievement and rates of progress than males and demonstrated more attentive behaviours in the classroom. To illustrate this, Figure 2 summarises both the cross-sectional and longitudinal data for the achievement levels of Victorian boys and girls in each of Years K to 11 on the Reading strand of the Victorian English Profiles (Rowe and Hill, 1996) in the form of 'box-and-whisker' plots, which describe the 'shape' of the distributions for each Year Level.



Figure 2 Box plots showing distributions for male and female students' progress on the English Profiles – Reading strand, by grade/year level in Victoria (n = 13 700).

Source: Rowe and Hill (1996, p. 335)

The 'boxes' in Figure 2 ('open' for males and 'shaded' for females) describe the range of achievement of the 'middle' 50 per cent of students at those Year levels. The top of each 'box' indicates the level of students achieving at the 75th percentile, the bottom of the 'box' shows the 25th percentile and the asterisk indicates the 50th percentile, or median value. The top and bottom 'whiskers' show the 90th and 10th percentile levels of achievement respectively.

Page 6 The distributions shown in Figure 2 for the *Reading* strand indicate a period of rapid growth in both girls' and boys' achievements during the first few years of schooling, coinciding with the period during which students acquire basic skills, and thereafter show a consistent rate of growth to Year 6. In addition to the marked gender differences in achievement, it is noticeable that the range of achievement increases markedly over the years of schooling, with more than four band widths separating Year 9 students at the 10th and 90th percentiles.

Figure 2 also provides evidence of a discontinuity between primary and secondary schooling with a slight decrease in the rate of progress of students in the first year of secondary school (Year 7). This pattern has been observed in several studies using common measures over primary and secondary schooling (e.g., Elly, 1992; Lunberg & Linnakylä, 1993; Purves, 1973). Rowe (1995) pointed out the similarity of this pattern with that shown by paediatric percentile growth-charts for height and weight during the pre-pubertal to early adolescent period of development.

Of particular concern is the flattening out at the 10th percentile from Year 4 to Year 9 (particularly for boys), indicating a trend of less than one band width of improvement. Note also, the minimal increase between Years 8 and 9 – especially for boys. It should be noted that while similar findings applied to the two additional measures of Literacy in this study (namely, the *Writing* and *Spoken Language* strands), both the higher achievement levels and rate of growth indicated by girls compared with boys were even more evident on these two strands. In reporting key findings from this study in terms of students' achievement progress in literacy, Hill and Rowe (1998) note:

Of the predictors of student Literacy Achievement, the most salient was students' attentiveness in the classroom. By far the major proportion of the variance in student Attentiveness was found to be at the student-level and the most influential predictor of Attentiveness was Gender, with female students being significantly more attentive than male students. Whereas the higher attentiveness levels of girls is familiar to most teachers, the implications for literacy curriculum and its assessment may not always be recognised.

In recent years, there has been a greater emphasis within Australian elementary schools, both in approaches to teaching and learning and to assessment of student achievement, on activities that require high levels of sustained attention. Such activities include on-task-demanding behaviours such as the production of written portfolios, the writing of extended pieces of prose, and the completion of written research projects. There has been a corresponding move away from short answer and 'check the box' type activities to tasks requiring increasingly higher levels of verbal reasoning skills activities in which girls have a wellestablished achievement and maturational advantage. It is possible that these changes in pedagogy may have placed, albeit inadvertently, a greater premium on attentiveness that have contributed to the phenomenon of substantial gender differences in students' literacy progress, mediated especially through Attentiveness.

In a report of key findings from the 1998 statewide Literacy and Numeracy Assessment Program for Year 3 and Year 7 students in Tasmanian schools, Rowe (1999c) made links between inattentiveness, disengagement and the lack of development of numeracy and literacy skills. In brief, the research evidence suggests that throughout their schooling for a large proportion of boys, the verbal reasoning requirements and general literacy demands of school curricula and assessment are beyond both their developmental capacity and normative socialization experiences to cope successfully. Bray et al. (1997) suggest that a key socialization factor contributing to boys' literacy underachievement compared with girls is their relative reluctance to read. They identify the increasing prevalence of video and computer use by boys as being particularly erosive to boys' propensity to read, and note that there are major differences between adolescent girls and boys in their patterns and quality of interpersonal communication among their peers. That is, girls are more likely to have social lives that revolve around verbal discussion and communication, whereas, at this developmental stage, boys were more likely to have socialization experiences that revolve around play. In commenting on these phenomena, MacDonald et al. (1999) record:

The increasing use of solitary computer games, more favoured by boys than girls, can only exacerbate these differences. Patterns of behaviour outside school could either contribute to girls' greater ease with language, or be a reflection of it.

Whatever the case, large numbers of boys can be said to fall into the category of 'underachieving readers', in the sense that they can decode print but cannot read in a sustained and flexible way, using a variety of contextual clues to extract meaning in the fullest possible sense.

This underachievement by boys and their inability to 'cope' with the operational literacy demands of school curricula and assessment, are frequently manifested in boys' 'acting-out' behaviours, low self-esteem and disengagement or withdrawal from willing participation in schooling. It has been commented (Rowe & Rowe, 2000b) that among the reasons for higher incidence of problem behaviours among boys in the middle and later years of schooling is that they frequently express feelings of alienation from a school curriculum that has become increasingly 'contextualised' with a concentration on the application of knowledge and skills to 'every-day' situations. In interviews, for example, boys frequently express disenchantment about their academic progress, particularly in literacy and following the transition from primary to secondary schooling. There are also differences noted in the rates of suspension for boys and girls. Ainley and Lonsdale (2000) found that even though there was no difference in absentee rates, boys had a higher rate of suspension and expulsion. Suspensions were found to be highest for boys aged between 13 and 15 years.

To compensate for this, many boys place a premium on success in sport and other activities that yield positive feedback from their peers, rather than recognition from school staff. Patterns of behaviour out of school also reflect gender disaggregation. Millard (1997) found that boys aged eight to 14 mainly only read in school while girls do most of their reading at home.

It is possible that a key reason for the observed gender differences in performance, attitudes and behaviours, is that since the early 1990s there has been a notable increase in the demand for higher levels of operational literacy and especially, verbal reasoning and written communication skills in school education – areas in which girls, on average, have distinct maturational and socialisation advantages (Rowe & Rowe, 1999). This demand is reflected in curriculum design and content, as well as the way it is taught and assessed – at all stages of primary and secondary schooling. It is evident in school-based assessment and standardised, statewide testing in the early and middle years of schooling, as well as in certifying examination programs at Year 12. For example, MacDonald *et al.* (1999) observe: "...recent changes in curricular design and assessment practices tend to favour the traditional strengths of girls".

The case of changes to some mathematics curricula and their assessment since the early 1990s is illustrative. Due to shifts in pedagogical emphasis, there is an increasing demand for verbal reasoning and written communication skills in curricular content and assessment in mathematics. For Year 12 4-Unit Mathematics in NSW or Specialist Mathematics in Victoria, for example, there is a requirement for students to demonstrate extremely high levels of such skills. That is, the verbally presented, 'in-context' problems require to be read, understood, translated into relevant algorithms, solved, then explained and justified. Such a process requires sophisticated levels of both verbal reasoning and written communication skills - which appear to be more ably handled by girls.

Longitudinal research

Longitudinal research undertaken by ACER shows that there has been a general increase in the difference between boys' and girls' level of reading ability over the past three decades. In Figure 3 it can be seen that over the period 1975 to 1995 the proportion of 14-year-old males who demonstrated mastery on the reading tests fell from 70 per cent to 66 per cent,

Boys in secondary school talk about reading and writing...

- I don't read much ... I do whatever I have to do and no more ... It's an effort to pick up a book and read page after page ... I have better things to do.
- I don't know why we can't have comic-type books in this school. They do learn you something.
- I start neatly but lose control with longer pieces ... Girls are neater and work harder than us ... Your hand gets tired and your work gets all messy ... It's an effort to do a lot of writing.
- Some teachers think neat handwriting equals good work. Some of my work isn't really read and cared about ... I'd like to find some other way of showing what I know.
- It [a lap-top] would make my work neater ... it would be easier to please the teacher, who will think it's looking good ... It helps you feel good about your work ... it's all done for you. No Tippex – just delete the mistakes.

Bleach (1998)

while the females attaining mastery changed from 73 per cent to 74 per cent. (Marks and Ainley, 1997).



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Source: Marks and Ainley (1997)

The OECD Programme For International Student Assessment – PISA 2000

Australia was one of 32 countries that participated in the OECD Programme for International Student Assessment (PISA) in 2000. The aim of PISA is to measure the preparedness for future life, of 15-year-old students (in most countries this is the final year of compulsory schooling). The assessment is to be carried out every three years.

There were three domains of assessment in PISA 2000, namely reading, mathematical and scientific literacies. In 2000 the focus was on reading, while in 2003 the concentration will be on mathematical literacy, and on scientific literacy in 2006. The assessment consists of a two-hour test followed by a questionnaire that asks students about their home background and their perceptions of some facets of school life. In Australia about 6000 students from all states and territories participated in the study.

In every country involved in PISA, girls performed significantly better than boys in reading literacy (OECD, 2001). On a scale where the international mean was standardised at 500 and the standard deviation at 100, the overall mean reading score in Australia was 528 – the result for boys was 513 and for girls 546. This gender difference was about the same as the OECD average gender difference.

The results in reading literacy in PISA were divided into 5 proficiency levels, each level having a score width of about 70 points – so the difference between girls and boys in Australia could be considered to be about half a proficiency level. The levels describe the complexity of the type of problems that the students were asked to solve. Tasks at Level 1 included making a simple connection between information given and common everyday knowledge, or locating a piece of explicitly stated information. At Level 5, students were expected to be able to critically evaluate text, hypothesise and make complex judgements and inferences. Girls were over represented in the top reading levels, making up 59 per cent of the students in Level 5 in Australia.

The measure of enjoyment of reading was standardised and scaled internationally to have a mean of zero and a standard deviation of one. Australian girls were above the international mean on this measure, while Australian boys were below the international mean.

Percentages by gender for reading attitu	des and habits i	n Australia
Variable	Girls	Boys
Never read for enjoyment	25	40
Read only if I have to	30	47
Reading is a waste of time	17	30
Read fiction at least once a week	41	23
Never borrow books from library	28	47
Mean on 'enjoyment of reading' scale*	0.16	-0.30

Table 1 Reading attitudes as measured in PISA.

*Note: The 'enjoyment of reading' scale was standardised internationally to have a mean of zero and a standard deviation of one. A negative score does not necessarily suggest that students had a negative view of reading – it simply shows that the result was lower than the international average.

The text that the students encountered in PISA was categorised as either continuous, (for example, prose and narrative text) or non-continuous (for example, timetables and lists). It was found that boys' performance was poor on assessment items associated with continuous texts and that boys do not read for pleasure as much as girls do. Forty per cent of boys said that they never read for enjoyment compared to 25 per cent of girls, while 47 per cent of boys read only if they have to, compared to 30 per cent of girls.

PISA also included measures of students' perceptions of school and home and their approaches to learning. One of these variables measured students' engagement in reading. Although it was found that Australian students, in general, scored the same as the OECD average on this measure, there were significant differences between boys and girls. This is important because engagement in reading was found to be correlated with reading literacy achievement in all countries.

PISA also collected information from the students about their home background, their parents' occupations and level of education. Socioeconomic status was defined on an international scale based on occupation (Ganzeboom et al, 1992). In Figure 4 it can be seen that when socioeconomic status is taken into account, the probability of boys with low socioeconomic status having a low reading score¹ is nearly 50 per cent, compared to girls of a similar socioeconomic status, who had a 34 per cent chance of having a low reading score. It was found that not only did the probability of being in the low reading group decrease with increasing SES, but that the difference in probability between boys and girls became smaller, supporting the notion that the boys from a low socioeconomic background are most at risk, with regard to reading.

¹ The 'low' SES group and the 'low' reading group were both defined to be those students in the lowest 25 per cent of each of those measures.



In mathematical literacy, boys outperformed girls in about half of the countries in the PISA survey. This was not true in Australia where no significant differences were calculated in any of the Australian states and territories (Lokan, Greenwood and Cresswell, 2001). In scientific literacy, internationally, there was no clear pattern of results relating to gender. In some countries boys performed better than girls (for example, Austria, Denmark, and Korea) while in others, girls performed better than boys (for example, Latvia, New Zealand and the Russian Federation). In Australia, there was no significant difference between boys and girls as a whole or in any of the states and territories. With increasing SES the probability of being in the lowest group for scientific literacy declined by the same amount for boys and girls.

YEAR 12 PERFORMANCE

The discrepancy between boys' and girls' performance in Year 12 assessments and tertiary entrance scores has been the focus of much discussion since the beginning of the 1990's. Comparisons between males and females can be made on the basis of their ENTER scores (Equivalent National Tertiary Entrance Rank), a score which is equivalent across Australia. Before these scores were developed it was difficult to compare the performance of students from different states. The calculation of ENTER scores takes into account the proportion of students from each state who sit for tertiary entrance examinations in any particular year.

Much of the debate has centred on the extent to which boys lag behind girls. Marks, McMillan and Hillman (2002) reported that in New South Wales, Victoria and Western Australia, females outnumbered males in the majority of subjects and in the top percentile band of results. On average, they found that female students scored two to three ENTER points higher than male students. The average female ENTER score in 1998 was 71.4 compared to the average male score of 68.7. Overall, there was a low, but significant correlation found between gender and ENTER scores, although the correlations are lower than those found for socioeconomic background.

The distribution of scores is also different for each gender, with boys' scores being dispersed to a greater degree than girls. Males are more likely to be found at the top and the bottom of the distribution. Buckingham (2000) writes that this is also true of some other measurements.

Buckingham also notes that of the 99 'all round achievers' named by the NSW Board of Studies in 1999, two thirds of them were girls and that the top 10 per cent of HSC students were comprised of 58 per cent girls and 42 per cent boys. In some other states, such as Queensland and South Australia, there was also a greater proportion of girls than boys in the top performance bands. Over the last 25 years there has been a notable shift in the pattern of educational performance on monitoringtype achievement tests and on public examinations, with girls now outperforming boys on all areas of the assessments. Consistent with international trends, this shift has been particularly marked over the last decade in Australia. For example, in his review of the New South Wales Higher School Certificate, McGaw (1996, p. 108) notes:

In 1991, males were over-represented at the top and bottom of the Tertiary Entrance Ranks, while females were overrepresented in the middle ranges.

By 1995, the position had changed markedly... Females are now overrepresented in all the high Tertiary Entrance Rank ranges, and males are even more overrepresented at the bottom.

Similarly, the gender effect in favour of females on achieved subject scores in the Victorian Certificate of Education (VCE) between 1994 and 1999 had an average magnitude of +0.26 standard deviation units per subject (Rowe, 1999b, Rowe, Turner & Lane, 1999, 2000).

West (1999) states:

Nobody seems to be able to explain satisfactorily what happened from 1990 onwards to assist girls, on average, to do better than boys and improve this performance year after year, nor why boys have begun to do so poorly, relative to girls.

MATHEMATICS

The states and territories conduct their own testing program for numeracy at various grade groups and, generally, there have been no significant differences observed in numeracy levels for males and females.

In some international studies of mathematics and science, such as the Third International Mathematics and Science Study (TIMSS) it has been found that boys generally score higher than girls, especially in science. The disparity increases towards the end of secondary schooling (Mullis, Martin, Fierros, Goldberg & Stemler, 2000). In Australia, however, Lokan, Ford and Greenwood (1996) found that in the results of both the 9-year-old and 13-year-old students there were no significant gender differences.

By analysing longitudinal data, Marks and Ainley (1997) found that between 1975 and 1995 there were no significant changes, generally, in numeracy achievement in 14-year-old students in Austalia and that the score for males is slightly higher than for females.

PROFICIENCY WITH COMPUTERS

Differences have been observed in experience and skill capacity between boys and girls in computing. Following a study conducted with 6213 students in a national sample in 1997/1998, Meredyth *et al.* (1999) compiled a list of core skills (Table 2):

Seventy-four per cent of boys reported that they had all 13 skills, compared with only 62 per cent of girls. Boys are slightly more likely than girls to report that they know how to delete and move files, create a new document and get data from a disk or CD-ROM – the same skills whose prevalence appeared to be related to school level, school sector and average weekly income of the school area.

Both boys and girls were most likely to have learned each of the skills at home rather than at school. However, this pattern is more pronounced for boys (a difference ranging from eight to 18 percentage points, depending on the particular skill), with a greater proportion of girls acquiring the skills at school.

They also note:

A comparison of girls' and boys' attainment of basic information technology skills at the end of primary school and the end of junior secondary school found that girls do not appear to catch up with boys as they progress through school. At the end of primary school, 54 per cent of girls had all the 13 basic skills compared with 67 per cent of boys; and at the end of junior secondary school, 71 per cent of girls had all the basic skills, compared with 83 per cent of boys.

They explain these variations as being likely to be related to many other gender differences identified in their study. For example they note the greater likelihood for boys either to own their own computer, or at least to have access to one at home. Boys also have a tendency to spend more time using computers outside school.

Meredyth et al, 1999

	Possess the skill		Acquired at home		Acquired at school		
Core skill	Girls	Boys	Girls	Boys	Girls	Boys	
	%	%	%	%	%	%	
Use a mouse	99	98	58	68	40	30	
Turn on a computer	99	98	61	70	37	29	
Use a keyboard	99	98	57	67	41	31	
Shut down and turn off	98	98	63	71	34	26	
Exit/quit a programme	98	98	60	69	37	28	
Save a document	95	95	52	62	43	34	
Print a document	96	96	57	64	37	31	
Start a programme	96	96	52	64	42	32	
Open a saved document	94	95	52	62	42	34	
Delete files	83	90	46	62	34	26	
Get data from floppy disk or CD-ROM	83	89	41	58	39	28	
Create a new document	80	87	40	54	41	33	

Table 2 Girls and boys basic computer skills and where first acquired.

EDUCATIONAL PARTICIPATION

Apparent retention rates for school education

For the past two decades, policy makers and the public have used, as an indicator of an education system's performance, its ability to retain students to Year 12. This measure is complex because it is also related to the labour market and the uptake of training opportunities by some students. Apparent retention rates, nonetheless, are important measures of the performance of education systems and related government policies. The apparent retention rate is an estimate of the percentage of students of a given cohort who continued to a particular level or year of education. In the accompanying figure, apparent retention rates are shown for full-time students who continued to Year 12. It is calculated



Figure 5 Apparent retention rates in Australian schools 1970–2001.

Source: Schools Australia 2001. Australian Bureau of Statistics

as a simple ratio expressed as a percentage of the number of students in Year 12 compared to the number of students in their cohort at the commencement of secondary schooling (Year 7 or Year 8, depending on the state).

It can be seen in Figure 5, that there has been a general increase in retention rates for both males and females in the period between 1970 and 2001. From 1970 until 1976, the female retention rate was less than the male retention rate. In 1975/76 both retention rates were approximately equal at around 35 per cent. The years from 1981 to 1991 saw the retention rates for all students double with an increase from approximately 35 per cent to 71 per cent. It is noticeable also that the difference between retention rates for males and females increased markedly during the 1980s, and has remained since. There has been a slight decrease in retention rates since 1992.

It is possible that boys' lower retention rates reflect the fact that more boys take up apprenticeships, although not all early leavers achieve a successful outcome and they may be put at a disadvantage compared to those who complete Year 12. Marks and Ainley (1997) and Lamb (1997) showed that low achievement in earlier years of high school reduces the chances of completing Year 12.

Marks, Fleming, Long and McMillan (2000) found that the gender gap between males and females in both participation in Year 12 and in higher education has continued to widen. Females outnumber males in both areas and the gap, which has increased since the 1980s, is now around 10 percentage points.

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Age participation rates

Age participation rates measure the number of full-time students of a particular age and sex, expressed as a proportion of the estimated resident population of the same age and sex. Whereas apparent retention rates rely on students having to progress year by year through the system, participation rates relate to the population as a whole.

It can be seen from Figure 6 that boys have a lower participation rate in the final years of secondary schooling from age 15 to 18. This information, taken along with the retention rate information is showing that, in general, there are factors influencing some boys to avoid their final years of secondary education.

The age participation rates of full-time students aged 15–19 in the different states of Australia (Figure 7) shows a lower rate of participation for males than females in all of the states.



Subject participation

Fullarton and Ainley (2000) confirmed previous patterns that had been observed in relation to subject choice by males and females. In 1998, they found that the subject areas that had a high proportion of female enrolments were the home sciences (females made up 71 per cent of enrolments), Languages other than English (68 per cent) and health (63 per cent). In contrast there was a predominance of males in technical studies (80 per cent), computer studies (65 per cent) and physical education (67 per cent). Males also made up 62 per cent of the enrolments in physical sciences and females made up 60 per cent of enrolments in biological and other sciences. In the years from 1993 to 1998, there was an overall decline of both male and female enrolments in sciences.

In mathematics, there was a higher proportion of males enrolled, especially in the specialist mathematics courses. In other areas such as English and Arts, females had a slightly higher level of enrolment.

Generally, boys have tended to choose subjects that are more orientated to the physical sciences, mathematics and technology and less orientated towards the humanities and high level English studies such as literature.

Single sex or coeducation

Whether or not boys and girls achieve better results in single-sex or coeducational environments has been the subject of much research in Australia and overseas. Rowe (1988) investigated whether being in a single-sex and mixed-sex class had a relationship with mathematics achievement and approach to school. Based on results of a study in Victoria he found that students in single-sex classes obtained significantly higher gains in confidence over time than those in mixed-sex classes.

Rowe (1988) wrote that the strategy of establishing single sex classes within coeducational schools arose in response to a body of literature (for example, Leder, 1987) which suggested that boys consistently receive a greater proportion of a teacher's time in mixed-sex classrooms. Spender (1982) estimated that boys receive two-thirds of a teacher's time in mixed-sex classrooms, principally through a higher incidence of teacher-demanding behaviours and teacher-student disciplinary interactions. It was found that both boys and girls were more likely to seek assistance from classmates of the same sex.

Parker and Rennie (1995) in their study of the Western Australian Single-Sex Education Pilot Project (SSEPP) 1993–1994 considered the advantages and disadvantages of single-sex groupings of students. The SSEPP was undertaken in eight high schools in mathematics and science classes, mostly at the Year 8 and 9 level. Parker and Rennie found that, in relation to the boys' and girls' attitudes, behaviours and experiences, there was complete congruence between the perceptions made by teachers, students and researchers.

They found that girls in mixed-sex groups had less favourable attitudes to Mathematics and Science than girls in single-sex classes or boys in single- and mixed-sex classes. In both Mathematics and Science, girls in mixed-sex classes perceived themselves to participate less, to be less extroverted, to have less interaction with the teacher and to receive more harassment from other students than girls in single-sex classes.

In this study it was found that there was a strong trend for the majority of students (especially girls) to favour single-sex classes. Teachers in the study mostly preferred single-sex classes for girls and mixed-sex for boys.

Several former all-boys schools in Australia have chosen to become coeducational, and some coeducational schools have adopted single-sex class groupings. However, it is important not to over-interpret the 'importance' of these gender and gender/class/schoolgrouping effects, since they are not as significant as class/teacher effects – regardless of student gender. There may also be other pressures for schools to change the gender pattern of their enrolment, such as a desire to increase numbers generally, or to broaden the base of enrolment.

Caution is also needed in interpreting results related to single-sex school and class effects because background factors, such as socioeconomic status need to be taken into account. In addition, much of the research has been based on cognitive achievements in school settings, without a broader consideration of long term social outcomes and attitudes that students take into their adult lives.

Post school destinations

An analysis of Australian Bureau of Statistics data (Transition From Education to Work, May 1999) shows some differences for males and females in their post-school destinations. The data summarises the 1999 destinations of those who left school at the end of 1998. A greater percentage of males than females went into full time employment after they left school (17 per cent for males and 12 per cent of females); 29 per cent of males and 37 per cent of females went on to Higher Education; overall, 59 per cent of males and 64 per cent of females go on to further education. Males were more likely to be unemployed than females.

Marks, Fleming, Long and McMillan (2000) showed that there was a change in the pattern of enrolment of males and females in higher education during the 1980s and 1990s. During the 1980s the attendance was much the same for both, whereas by the mid 1990s females were enrolled at a rate 8 per cent higher than males.

Looking at the probability of completing a tertiary course, Urban *et al.* (1999) found that gender was an important factor. They examined the academic outcomes in 1997 of undergraduates in Australia who had commenced a tertiary course in 1992 and found that 64 per cent of females had completed an award, compared with 55 per cent of males. In addition, they also reported that a greater proportion of males in 1997 had either not completed a course or were not studying at the university of their enrolment.

Between the years 1993 and 1999, the proportion of total female enrolments at university increased from 53.3 per cent to 55.2 per cent while male enrolments decreased from 46.7 per cent to 44.8 per cent. (DEST, 2002).

SOCIAL DEVELOPMENT AND OUTCOMES

Attitudes to society

Attitudes to society are formulated, at least in part, by the experiences which schools and schooling provide. A study of such attitudes (Ainley, Batten, Collins and Withers, 1998) shows an interesting double effect. Not only do girls and boys differ significantly in their attitudes to certain values like rules and conventions and community well-being while they are in primary school (in this study, Year 5), but the differences have increased (again significantly) when students' views are investigated again after a few years' progress through their schooling (in this study, Year 10).

For example, consider the following sets of ratings drawn from the nationally representative sample of 350 schools used in the study. There are three issues that stand out as being central to a person's experience of society, and chances of living well and happily within it – Relating to others; Community well-being; Conformity with rules and conventions. Gender differences relating to these issues were observed. In each of these major categories representing social attitudes, boys' are lower than girls' ratings, in late primary school. Although between Year 5 and Year 10 all ratings decline, boys' ratings decline more than girls' do.

It may be that reducing gender differences in attitudes to society is as significant a task, in social terms, as minimising gender differences in achievement levels.

Juvenile crime

It appears that beyond the classroom, boys are also undergoing different experiences to girls. This becomes evident when statistics relating to crime are investigated. In exploring the gender differences in juvenile crime rates as measured by the number of arrests, Buckingham (2000) found that the number of boys arrested was higher than the number of girls. She found, also, that the gender gap is particularly large for property crime.

		Ratin	gs of impo	ortance o	f:		
	Relating to others		Community well-being		Conformity with rules and conventions		
	Year 5	Year 10	Year 5	Year 10	Year 5	Year 10	
Males	49.1	45.0	50.8	44.2	52.3	44.3	
Females	53.0	52.5	54.2	50.9	55.2	48.9	

Table 3Attitudes to society.

All differences in each category are statistically significant. Compiled from Ainley, et al. 1998, pp.41; 55; 71 In addition, the statistics indicate that young males are over represented as victims of crime, compared to girls. Buckingham found that victimisation rates for assault and attempted murder were highest among young men aged from 15 to 24.

It would appear then, that some young men are not only the perpetrators of a disproportionate amount of crime, but also the victims of it.

Suicide

A person's maladjustment to society can, in its most severe form, take the form of intentional self-harm or suicide. The statistics relating to intentional self harm indicate a difference between the genders.

Figure 8 shows the male:female ratio of suicide for different age groups in

Australia. For people aged 15–24, it was found that the rate of male suicide is five times that of the female rate. In fact, suicide is the leading cause of death among young males in the 15–24 years age group. Suicide rates for males of all ages are much higher than those for females (Steenkamp and Harrison, 2000). Of the total number of suicides, 80.1 per cent were males.

In observing general trends in suicide over the twentieth century from 1921 until 1998, Buckingham, found that suicide rates for young males increased significantly. In the 15–19 years age group the rate doubled in that time from 9 to 18 per 100 000, while for 20–24-year-old males the rate tripled from 12 to 36 per 100 000. In comparison the female suicide rates for the same age groups did not go above 9 per 100 000 in the same time period.



Figure 8 Comparison of male and female suicide rate.

Source: Steenkamp and Harrison. Suicide and hospitalised self harm in Australia. Adelaide: Australian Institute of Health and Welfare (2000).

IMPLICATIONS AND STRATEGIES

The fact that teacher-factors have strong positive effects on students' attitudes, behaviours in the classroom and achievement outcomes is very significant - for the education of both boys and girls. As Slavin et al. (1997) found in their evaluation of the "Success for All" program among low socioeconomic status schools in Baltimore and Philadelphia, students who, regardless of their gender, socioeconomic or ethnic backgrounds, are taught by well-trained, strategically focussed, energetic and enthusiastic teachers, are fortunate. The fact that teachers and schools make a difference should provide impetus and encouragement to those concerned with the crucial issues of educational effectiveness.

Slade (2002) emphasised the importance of having good teachers in a school and how important it is that they are willing to establish relationships with their students based on mutual respect and understanding.

At the very basis of the notion of educational effectiveness, however, operational literacy, verbal reasoning and written communication skills are crucial, and need to be emphasised as keys to improving the achievements and experiences of boys throughout their primary and secondary schooling.

MacDonald *et al.* (1999, pp. 18–19) outlined the following as being effective strategies that support the learning needs of boys:

- Focus on support for literacy across the curriculum;
- Early diagnosis and intervention for those 'at-risk' of literacy underachievement;

- Highly structured instructions and lessons;
- Greater emphasis on teacher-directed work in the classroom in preference to 'group' work;
- Clear objectives and detailed instructions; explicit criteria for presentation of work;
- Short-term, challenging tasks and targets with frequent changes of activity;
- Establishment of assessment and monitoring systems designed to identify underachievement in key skills across the curriculum, as well as in individual subjects;
- Regular personal interviews for the purposes of target-setting;
- Positive reinforcement: immediate and credible awards for quality work, increased effort and/or improved behaviour;
- Providing opportunities for extra tuition/revision;
- Planned program of differentiated personal and social development;
- Meaningful work experience placement aimed at informing students about changing roles in adult and working life.

Bleach (1998) suggests:

- to have highly public and well-supported expectations;
- to explain carefully to parents the importance of their role as listeners and readers;
- to set reading challenges for boys that are realistic and that stretch them;

Page 22 • to use phrases and techniques like 'word attack skills' which appeal to boys' sense of competition.

The second point is especially important. Shopen and Liddicoat (1998) make the position clear: mothers are more likely to be engaged in literacy activities associated with the school. When fathers

What should boys read?

- focus on the quality of reading

 both what is read, and how well
 it is read in classroom, library and
 elsewhere;
- focus on the fact that boys do read print matter such as newspapers and computer messages, and establish the need to introduce other sorts of text into schools;
- focus on boys' preference for factual and informative reading and writing, at the expense of writing about feelings;
- focus on stories being important for entering into others' lives and see how they deal with problems, relationships, and generally assist people to manage their lives;
- emphasise narrative as a powerful text in working out what our lives mean;
- relate reading to the more general need for boys to be connected;
- recognise that non-fiction, which many boys prefer, is valuable but is not generally read in as much volume, and is therefore weak in terms of developing reading stamina.

engage in literacy activities they are more likely to be at work. At home they tend not be involved in activities that are associated with school literacy. Breaking this pattern could be beneficial: for many fathers, reading to their sons, or at least associating with specifically school literacy activities, could both increase the opportunities for role-modelling and promote literacy at the same time.

Boys' experience of fiction is reputed to be lower than girls', both before and after starting school (Bleach, 1998), and this is reported as a factor which influences their learning and response styles beyond the language classroom and its associated activities. For example Murphy and Elwood (1998) describe boys' preferred response style in writing as "episodic, factual and commentative", compared with girls' "extended reflective composition". In some ways boys "sacrifice deep understanding for correct answers achieved at speed" (Sukhnandan, 1999). But there are novels and narratives for boys available, which do not sacrifice exploration of relationships in the interests of action, drama and speed. They will probably inevitably have male lead characters.

Put more simply, the strategic answers for schools will involve:

- the use of curriculum content and resources which will interest both boys and girls;
- more teacher-led (though not necessarily dominated) work;
- mixed gender pairing in appropriate schools and contexts;
- single-sex classes for special issues;
- provision of clearly available and resource-rich learning support.

Gilbert and Gilbert (1998) identify five main types of intervention used with boys:

- disciplinary responses which attempt to control the anti-social fallout of boys' behaviour, like bullying and harassment;
- strategies [which] consider the knowledge content needed if boys are to understand how they are influenced by contemporary masculinity;
- boys' ability to discuss and reflect on their experience and how it is influenced by their social context;
- develop skills such as interpersonal communication which might assist boys in their relations with others;
- deal with boys' attitudes, values, emotions and sensitivities through strategies approaching personal therapy.

The use of these interventions was found to have a positive effect on boys.

CONCLUSION

Gender issues in schools and society have been the subject of much research and discussion in recent years. In the past two decades there have been a number of initiatives and changes that have occurred. Girls have been encouraged to participate more in subjects regarded as non-traditional for them, such as high level mathematics courses, physical sciences and information technology. At the same time, boys have been encouraged to study subjects such as literature, the arts and languages other than English. Research suggests that these traditions are difficult to break down.

There have been many other changes in education while these initiatives were taking place. In many subjects undertaken at school, there has been a move towards curricula that have a much stronger focus on 'everyday' issues and social implications. This is true, not only of the humanities subjects but also in mathematics and sciences. There is a body of evidence supporting the notion that some boys are experiencing difficulty in adjusting to these challenges that they face in school and, later, in society.

It appears that the major area of potential difficulty at school for boys is literacy. Achievement results in primary and secondary education suggest that there are significant gender differences, especially in the area of reading where girls outperform boys at both levels.

International studies show that, although some of these patterns are widespread throughout the world, the degree of engagement that Australian boys have with reading, is less, on average, than students overseas. It has been shown that this has an effect on the level of reading proficiency that they can obtain.

An attempt to overcome the difficulties faced by some boys can be undertaken with the assistance of teachers, schools and parents. Many schools are undertaking programmes which include the provision of appropriate stimulating reading material to try to engage boys in reading.

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In the past decade there has been a growing perception in Australia that girls have become more successful pursuing their educational goals than boys – especially in educational outcomes relating to literacy. In addition there is evidence from a range of studies that boys regard their school experience less favourably than girls and are less strongly engaged in the work of schools. This paper focuses on students' achievement and attitudes to school, and the influences that shape different outcomes for boys and girls. Beyond school, a smaller proportion of boys than girls progress to higher education, although a larger proportion of boys participate in vocational education and training programs. Consideration is also given to the broader social development of boys and how schools contribute to that development.

