

LITERATURE REVIEW OF BOYS EDUCATION

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LITERATURE REVIEW OF BOYS' EDUCATION

THE PURPOSE OF THIS REVIEW

Concern for boys in education centres around both their achievement and their anti-social behaviour (Lingard, 1998). This literature review provides an analysis of the evidence about differences in learning for boys and girls based on current international research knowledge and strategies for improving boys' learning outcomes.

In reviewing the evidence on boys' performance in English and literacy, Buckingham (1999) suggested that four main factors are implicated in the gender gap. These include:

- biological differences between the sexes affecting capacities and interests;
- gender biases which define activities or skills as 'not masculine', or which underplay the role of masculine models in encouraging certain activities or skills;
- teaching, curricula and assessment; and
- socio-economic factors, including family income, family structure and parental education.

This review addresses the following questions:

- What does the evidence available indicate are the principal areas of difference in schooling outcomes for boys and girls?
- What *factors*—educational and social—are associated with boys' underachievement at school and what pedagogical practices have been demonstrated to overcome them?
- What social and behavioural *factors* have been found to be associated with boys' educational underachievement?
- Which strategies are successful in improving educational achievement for different groups of boys at primary and secondary level?

SOCIAL AND BEHAVIOURAL FACTORS ASSOCIATED WITH BOYS' UNDERACHIEVEMENT

Identity Construction

A striking feature of the literature on boys' underachievement is the current focus on the construction of male identity. Central to this focus, according to some educators (Connell, 1989; Connell, 1995, 2000; Epstein, 1997; Kenway & Fitzclarence, 1997; Mac an Ghaill, 1994; Salisbury, 1999; Skelton, 1996, 1997), are four tenets: (1) masculine identities are historically and culturally situated, (2) multiple masculinities exist, (3) there are dominant and subordinate forms of masculinity, and (4) masculinities are actively constructed in social settings (Jackson, 2002). The literature on masculinities in boys' education focuses on boys being 'one of the lads', which involves displaying characteristics most associated with dominant forms of masculinity (Kenway & Fitzclarence, 1997).

Alloway, Freebody, Gilbert and Muspratt's (2002) report on *Boys, Literacy and Schooling* in Australia also emphasised the importance of boys' understanding and negotiating their construction of masculinity, in particular in addressing stereotypical images of masculinity. The need to view masculinity as a pluralist construct has been raised by a number of educators and researchers (Connell, 1989, 1996; Coulter, 2003; Davies, 1997; Dixon, 1997; Epstein *et al.*, 1998; Hurrell, 2001; Imms, 2000, 2003; James, 1999; Keamy, 2004; Keddie, 2003; Mallan, 2001; Martino, 1995a, 2000a, 2001; Martino & Berrill, 2003; Martino *et al.*, 2004; Nayak, 2003; Raphael Reed, 1999; Renold, 2000, 2001, 2003; West, 1999). Gilbert and Gilbert (1998) suggest that broadening boys' outlook on alternative forms of masculinity would result in greater acceptance of other expressions of masculinity. They encourage schools to adopt a strategy whereby boys examine the effects of traditional masculinity on their development and re-construct the qualities contained within it. The three aims involved in this strategy are to: nurture boys' acceptance of the many "diverse ways of being human rather than singular ways of being masculine" (p.36); develop boys' understanding that expressing masculinity changes according to context; and develop boys understanding that masculinity and femininity are not dichotomous and opposing ways of being, and that many qualities are desirable for both girls and boys.

Martino (2001) recommends that teachers use texts in English to assist boys to question the impact and effect of the concept of gender on their attitudes and behaviour, particularly in regard to school work, classroom behaviour and subject choice. The use of particular texts to interrogate power relationships, and to access alternative masculinities (Hatchell, 2003).

Behavioural Issues

Bullying, in a school context, has three elements: a desire to hurt; an imbalance of power favouring the perpetrator; and the action is

perceived as oppressive (Rigby, 2002), often linked to the issue of homophobia (Lingard *et al.*, 2002a; Martino & Pallotta-Chiarolli, 2003).

The international research on strategies to deal with issues such as bullying and sexual harassment reflect school disciplinary strategies, skill and personal development strategies, and knowledge-based strategies (Alton-Lee & Praat, 2001). School policies that punish individual students only temporarily suppress the anti-social behaviour because they rarely link the punishment to wider antisocial practices — such as, sexism, homophobia and racism. Further, disciplinary strategies themselves may model dominant practices of masculinity. If punishment is to be used, positive reinforcement of appropriate behaviour is also necessary to teach students what is expected of them. Skill and personal development strategies involve teaching self-awareness, conflict resolution, assertiveness, effective communication, and active listening skills. However, Gilbert and Gilbert (1998) suggest that whilst this skill training is beneficial as part of a comprehensive program for dealing with harassing behaviour, the issue of how anti-social behaviour relates to and/or maintains wider power relations may be ignored. Strategies range from approaches that simply identify and name bullying and harassment, to those structured for attitudinal change, through to those aimed at critiques of power and practices (Alton-Lee & Praat, 2001).

Family Environment

In their research on the educational needs of boys, Lingard *et al.* (2002a) found that many, but not all, teachers and other school personnel adopt deficit models of parents and students in explaining boys' underachievement and inappropriate behaviours. Parental education attainment was found to influence parental expectations of their children's achievements. Children from middle-class families with parents working as professionals or in business occupations were more cognisant of the importance of school-work and more focussed at school. Teachers believe that lack of support at home is a major obstacle to engaging boys at school Alloway *et al.* (2002). According to teachers, this involves parents not valuing education; lack of the engagement of father in their son's education; difficult family dynamics; and little encouragement to read (Martin, 2002).

There is evidence of a relationship between school attainment and family structure: the proportion of children with low academic achievement is almost twice as high for sole parent families as for coupled families (Zubrick *et al.*, 1997). Further, divorce often leads to a fall in socio-economic status which subsequently adversely affects educational outcomes. Schools seek to ameliorate the impact of these factors by modelling appropriate male behaviour; building better pastoral care into the curriculum; and using external role models (Martin, 2002).

Socio-Economic Background

The differences in achievement between boys and girls are greater for lower socio-economic groups (Alloway & Gilbert, 1997b; Buckingham, 1999; Grinion, 1999; Livaditis *et al.*, 2003; Lingard & Douglas, 1999; Marks *et al.* 2004; Mitchell, 2003; OECD, 2001; Skelton, 1996; Teese *et al.*, 1995; Tinklin *et al.*, 2001).

Entrants to Reading Recovery in New Zealand were proportionately lower in high SES deciles than in low SES deciles —17% of Decile 1 students and 12% of Decile 10 students accessed the program in 2005. Two-thirds of the students accessing Reading Recovery were boys (Ng, 2006).

The NEMP 2004 Report indicated that there were differences in performance in 20 of the 25 of the Reading tasks at Year 4 and in 12 of the 20 Speaking tasks between high, middle and low SES deciles. In all cases, the higher decile group had a higher level of performance than lower decile groups. A similar result was evident for Year 8, although in this case, the gap between the low SES group (Deciles 1–3) and the middle SES group (Deciles 4–7) was greater than that between the middle and high SES group (Deciles 8–10).

Figure 1: Effect size of differences between low and high SES for boys and girls (PISA 2000 data for NZ)

	Effect Size ¹ — Girls	Effect Size ¹ — Boys
Reading	0.85	0.86
Mathematics	0.80	0.84
Science	0.93	0.74

¹ Effect size: difference in the mean for the High-SES and Low-SES groups, divided by the designed standard deviation for the tests.

Figure 2: Year 12 estimated completion rate by socio-economic status and gender 1999–2003 (Australia)^{a, b}

	Low Deciles			High Deciles			Total		
	Boys %	Girls %	Total %	Boys %	Girls %	Total %	Boys %	Girls %	Total %
1999	55	70	62	73	82	78	62	75	69
2000	55	71	63	74	82	78	63	75	69
2001	56	69	62	72	80	76	62	74	68
2002	56	70	63	74	82	78	63	75	69
2003	56	69	63	75	83	79	64	75	69

Notes:

- Data are estimates only. They express the number of Year 12 completions (Year 12 certificates issued by state education authorities) as a proportion of the estimated population that could attend Year 12 in that calendar year. There are variations in assessment, reporting and certification methods for Year 12 across states and territories.
- The ABS Index of Relative Socio Economic Disadvantage has been used to calculate socio-economic status on the basis of the postcode of students' home addresses. 'Low' socio-economic status is the average of the lowest three deciles and 'high' is the average of the highest three deciles.

Source: SCRGSP (2005) Table 3A.40.

The differences in the mean scores for High-SES and Low-SES students in New Zealand was very similar for both boys and girls in PISA 2000. The gender difference in the mean scores for reading (Effect Size = -0.46) was reflected across the SES range — 36% of low-SES 15 year-old girls were 'high achievers' in reading literacy, compared to 20% of low-SES boys. The proportion of low-SES girls who were 'low-achievers' (13%) was lower than the proportion (29%) of boys who were 'low-achievers' (NZ Ministry of Education, 2004).

Two-thirds of female school leavers in New Zealand had Sixth Form Certificate or higher qualifications compared to 59% of males, in 2001. Students from low socio-economic communities were less likely to attain higher school qualifications. In 2001, 47% of school leavers from deciles 1-3 schools attained Sixth Form Certificate or higher qualifications, compared to 60% of those leaving deciles 4-7 schools and 79 percent of those leaving deciles 8-10 schools.

There is significant variation in school completions by gender within and across socio-economic status deciles in Australia also. Figure 2 shows that both male and female students in the lower deciles of socio-economic status had considerably lower completion rates than their peers in the higher deciles for the period 1999-2003. The Australian data indicate that the gender differential is greater in the lower SES deciles than the higher deciles.

Geographic Location

The main geographic location factors in New Zealand relate to the differentiation between metropolitan and country schools. Due to its much greater size, there is also a factor of remoteness in Australia. Students in metropolitan areas achieve at a significantly higher level in Reading, Mathematical and Scientific Literacy and Problem solving than students in provincial cities, rural and remote areas (ACER, 2005).

The data available for New Zealand is not disaggregated by gender, however, NEMP Mathematics data for Year 4 indicates that students in provincial cities performed less well on 5 of the 64 tasks. At Year 8 there was a difference between centres of different size on only 1 of the 91 tasks. The NEMP 2004 Report indicates that the differences in performance in Reading for students from locations of different population size are small at both Years 4 and 8.

Australian data presented in Figure 3 indicates that the percentage of students completing Year 12 decreases with the degree of rurality/isolation. Across Australia, the differential between metropolitan and rural and remote locations was larger for boys than for girls.

Figure 3: Estimated Year 12 completion rates, by locality and gender (2003)^{a, b, c}

	NSW %	Vic %	Qld %	WA ^a %	SA ^c %	Tas ^c %	ACT ^b %	NT ^a %	Aust %
Metropolitan Cities									
Male	67	68	71	63	62	73	78	..	67
Female	75	79	76	70	80	85	82	..	76
All students	70	74	73	66	71	79	80	..	72
Provincial Cities									
Male	54	58	67	57	..	52	..	34	58
Female	63	72	70	63	..	61	..	43	66
All students	59	65	68	60	..	56	..	39	62
Other Provincial and Remote Areas									
Male	58	58	69	65	52	47	..	32	60
Female	74	82	85	78	81	70	..	41	78
All students	66	70	76	71	66	58	..	36	69
Very Remote Areas									
Male	44	..	56	28	35	..	..	6	30
Female	60	..	76	34	48	..	..	6	38
All students	51	..	65	31	41	..	..	6	34
All Areas Combined									
Male	62	65	69	62	59	61	78	26	64
Female	72	79	76	70	80	73	82	32	75
All students	67	72	72	66	69	67	80	29	69

Notes:

- a) Data are estimates only. They express the number of Year 12 completions (Year 12 certificates issued by state education authorities) as a proportion of the estimated population that could attend Year 12 in that calendar year. There are variations in assessment, reporting and certification methods for Year 12 across states and territories.
- b) Definitions are based on the agreed MCEETYA Geographic Location Classification. Metropolitan includes State capital city Statistical Divisions (SD), all of the ACT and other Statistical Districts of population 100,000 or more. Provincial includes Darwin SD, Statistical Districts of population less than 100,000 and other non-remote areas.
- c) 'Remote' comprises approximately 3 per cent of the 15–19 year-old population in both 1999 and 2000. Relatively small changes in the annual estimated resident population or number of completions can lead to substantial changes in the completion rates for 'Remote' areas.

Source: SCRGSP (2005) Table 3A.41.

BIOLOGICAL DIFFERENCES

Kimmel (2000) provides an historical account of how brain research has been used to explain gender differences. Whilst it is acknowledged that each hemisphere of the brain is responsible for different functions, the exact functions are difficult to identify.

Some researchers claim that boys' underachievement in school is innate and biologically determined. For example, Biddulph (1998) has argued that boys' brains are different from girls', especially in terms of their capacity to process linguistic information — as a result, boys are naturally less competent than girls in literacy and English because of this difference. On the other hand, several other studies have failed to show gender differences in brain structure. Gilbert & Gilbert (1998) reviewed the evidence for theories used to account for the behaviour difficulties of boys. They argue that to reduce behaviour solely to biology is simplistic since human behaviour is open to environmental influences offering predictability. More importantly, however, biological brain differences do not explain the *increasing* gender differences in literacy skills and English (Buckingham, 2000).

The main findings from the research into brain-based approaches to learning indicate that the educational implications at this stage should be treated with considerable caution.

This field is still in its infancy; much of the data, in cognitive science, neuroscience, and genetics is incomplete. Far too often new findings are misunderstood and disseminated by the press and other media—setting in motion a series of chain reactions and the establishment of myths that are sometimes both entertaining and damaging...otherwise intelligent school administrators have said that they need to repaint classrooms in pastel colours because brain-based research indicated that children learn better in a pastel environment. That's nonsense. (Fisher, 2004)

The number of discoveries from brain research that have been exploited by the learning sciences is still slim...Current research methods in cognitive science necessarily limit the types of questions that are addressed...the type of educational tasks favoured by society will remain more complex than the ones that might suit cognitive neuroscience. (OECD, 2002: 48)

There is a gulf between current science and direct classroom applications. Most scientists would argue that filling the gulf is premature. Nevertheless, at present, teachers are at the receiving end of numerous 'brain-based learning' packages. Some of these contain alarming amounts of misinformation, yet such packages are being used in many schools. (Goswami, 2006)

EVIDENCE ABOUT GENDER DIFFERENTIALS

Figure 4: Gender differentials in selected aspects of human performance related characteristics

Effect Size	Dimension	Effect Size	Dimension
	Mathematics		Social
-0.1	Computation	+0.6	Physical aggression
-0.0	Concepts	>+0.1	Verbal aggression
+0.1	Problem solving	>+0.3	Aggression in real-world settings
	Language	+0.1	Helping behaviour
-0.1	Reading comprehension		Psychological Bell-being
+0.1	Vocabulary	+0.2	Self-esteem
-0.5	Spelling	+0.6	Body esteem
-0.4	Language	+0.1	Life satisfaction
	Computer Use	-0.1	Happiness
+0.4	Self-efficacy	-0.1	Coping
	Reasoning		Leadership Styles
-0.0	Verbal		Interpersonal style
-0.0	Abstract	-0.1	Task orientated style
-0.1	Numerical	-0.1	Democratic vs autocratic
+0.8	Mechanical	+0.3	Transformational
+0.2	Spatial	-0.1	Transactional
-0.3	Perceptual speed	-0.2	Laissez-faire
	Attribution of	+0.2	Motor Skills
+0.2	...failure to ability	+0.1	Balance
+0.2	...failure to effort	+0.6	Grip strength
-0.2	...failure to luck	+2.2	Throw velocity
	Communication	+2.0	Throw distance
-0.1	Talkativeness	+0.2	Vertical jump
-0.3	Affiliative speech	+0.6	Sprint speed
+0.1	Assertive speech	-0.3	Flexibility
-0.2	Facial expression processing	+0.5	Activity level

+ve values represent stronger effect for males. Source: Hyde (2005)

Gender differences in schooling need to be considered in the context of gender differences more generally — that is out-of-school gender differences and gender differences in the adult population. Below we provide a synoptic overview of performance related characteristics that research has found to vary between males and females. A wide-ranging review of the evidence on gender differentials across six domains; cognitive attributes; verbal and non-verbal communication;

social and personality attributes, such as aggression and leadership; psychological wellbeing measures, such as self-esteem; and motor behaviours, such as throwing distance; and a range of miscellaneous areas such as moral reasoning, has recently been published (Hyde, 2005). The research analysed 128 meta-analyses which reported 7,065 separate studies of differences between males and females across all age groups.

Seventy-eight percent of the male–female differences in the 128 separate meta-analyses were found to be small or close to zero. Figure 4 indicates the areas in which gender differentials were found to be zero or very small include reading, verbal reasoning, abstract reasoning, numerical reasoning, mathematics, and communication skills.

The range of differentials in Figure 4 is from -0.5 (spelling) to 2.2 (throw velocity), although only a small number of differentials are larger than an effect size of 0.3, the size generally considered to represent a difference that is of substantive importance in most educational research settings. Females have an advantage in writing, spelling, language and perceptual speed. Males have an advantage in the following areas: mechanical reasoning, spatial reasoning, assertive speech, various aspects of aggression, self-esteem and body-esteem, transformational leadership, grip strength, throw velocity, throw distance, sprint speed, and activity level.

EDUCATIONAL FACTORS ASSOCIATED WITH BOYS' UNDERACHIEVEMENT

The under achievement of boys in New Zealand was the focus of the Education Review Office (ERO, 1999) report: *The Achievement of Boys*. That report concentrated to a large extent on achievement of boys in secondary schooling, making use of evidence such as performance in School Certificate examinations. The report addressed the following issues: underachievement of boys; systems for identifying groups that are underachieving; barriers to achievement; and programs to remove barriers or encourage underachieving students to achieve to their full potential.

Achievement in Mathematics and Science

A key characteristic of data on a range of male and female characteristics is that the male distribution is often wider spread than that for females. Floor and ceiling effects in many assessments and tests attenuate the range of learning achievement that is reported. As a result, there is sometimes evidence of some 'clumping' for boys in the lower 'tail' of the distribution.

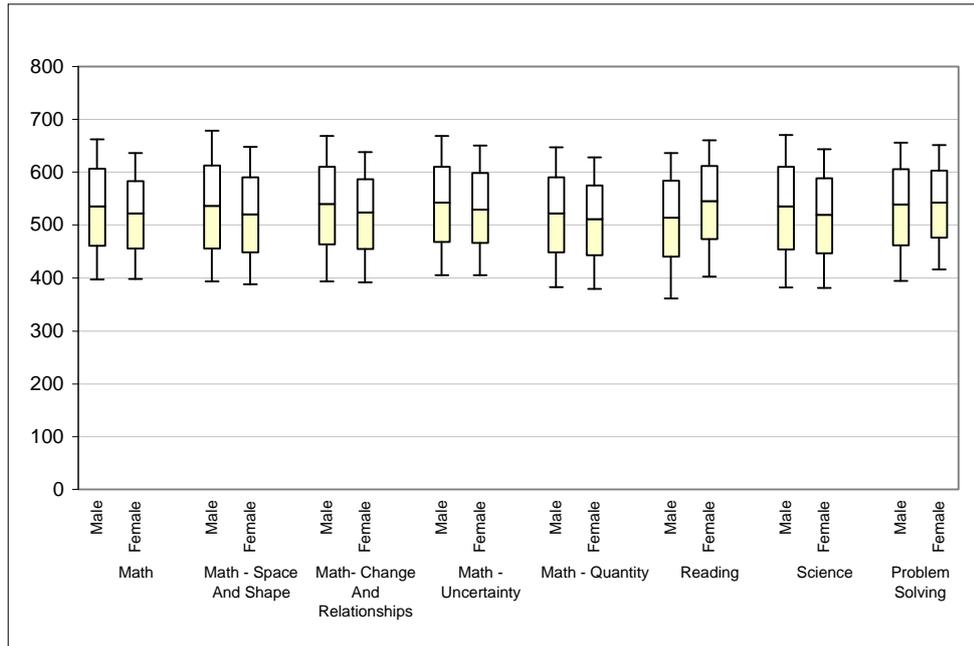
This fits with the finding that a higher proportion of boys, than girls, do not meet Australian national benchmarks at Year 3 and 5 in literacy. Further, it provides an explanation as to why we often find that there are more boys than girls in early-years and other primary school remedial reading programs. However, the evidence that there are more boys in the lower tail of the distribution does not in any way warrant the interpretation that, overall, boys are achieving at a lower level than girls.

This supports the arguments of Martino *et al* (2004) and others that the role of programs to support boys' learning should be to support those who are at-risk, because it is these boys who are over-represented in the lower tail of the achievement distribution.

New Zealand

Figure 5 summarises the data for New Zealand 15 year-old students in PISA 2003. Although boys achieved at a marginally higher median level, the difference for boys and girls in the PISA population for the seven measures of achievement in Mathematics, Science or Problem Solving, was not of substantive importance. The distribution of achievement for boys was marginally wider than that for girls on all measures — as indicated by the difference between the lower (10th percentile) and upper (90th percentile) bar for the distribution on each measure.

Figure 5: Differences in Achievement Levels for Boys and Girls in PISA 2003 (New Zealand)



Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

Figure 6 shows the effect size for gender differences in New Zealand on a range of mathematics and science measures over the last decade. There is a difference in favour of boys on 14 of the 28 measures, and in favour of girls on the other 14 measures. However, the magnitude of the differences between boys and girls on all measures is not of any substantial significance — +0.01 in favour of girls for the 23 maths measures, +0.05 in favour of girls on the 4 science measures, and -0.03 in favour of boys on the single problem solving measure. The gender differential calculated from the measures of mathematics used in the international studies in Figure 6 (mean ES = 0.02) is very close to the gender differential calculated on the basis of the NEMP assessments (mean ES = -0.01).

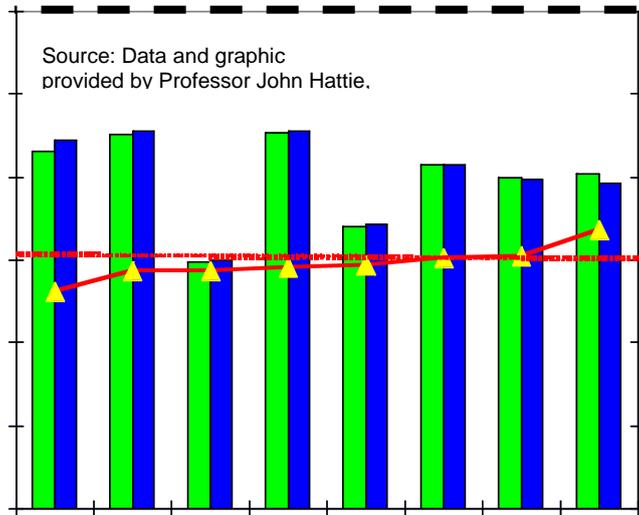
Figure 6: Gender differentials evident in New Zealand mathematics and science learning outcomes data

Curriculum Area	Year of Schooling	Differential in Favour of Boys ¹	Source ³
Mathematics	4	+0.01	NEMP 1995–98 ²
Mathematics	8	-0.06	NEMP 1995–98 ²
Mathematics	4	+0.08	NEMP 2004
Maths (Number & Algebra)	4	+0.11	NEMP 2004
Maths (Measurement)	4	+0.11	NEMP 2004
Maths (Statistics)	4	-0.05	NEMP 2004
Mathematics	5	-0.14	TIMMS 1994
Mathematics	5	+0.08	TIMMS 1998
Mathematics	5	-0.08	TIMMS 2002
Mathematics	8	-0.03	NEMP 2004
Maths (Number & Algebra)	8	-0.05	NEMP 2004
Maths (Measurement)	8	-0.03	NEMP 2004
Maths (Statistics)	8	-0.06	NEMP 2004
Mathematics	9	-0.11	TIMMS 1994
Mathematics	9	+0.03	TIMMS 1998
Mathematics	9	+0.01	TIMMS 2002
Mathematics	Age 15	-0.03	PISA 2000
Mathematics	Age 15	+0.05	PISA 2003
Graphs/Tables/Maps	4	-0.07	NEMP 1995–98 ²
Mathematics	8	-0.04	NEMP 1995–98 ²
Maths (Quantity)	Age 15	+0.17	PISA 2003
Maths (Uncertainty))	Age 15	+0.12	PISA 2003
Maths (Space & Shape)	Age 15	+0.12	PISA 2003
Science	Age 15	-0.12	PISA 2000
Science	Age 15	+0.16	PISA 2003
Science	4	+0.08	NEMP 2003
Science	8	+0.09	NEMP 2003
Problem Solving	9/10	-0.03	PISA 2003

¹ Effect Sizes: differences between the mean scores for boys' and girls' divided by the designed standard deviation for the test, ² NEMP data for 1995–1998 reported in Crooks & Caygill (1999). ³ Unless stated otherwise, all data is sourced from the official reports for the relevant project.

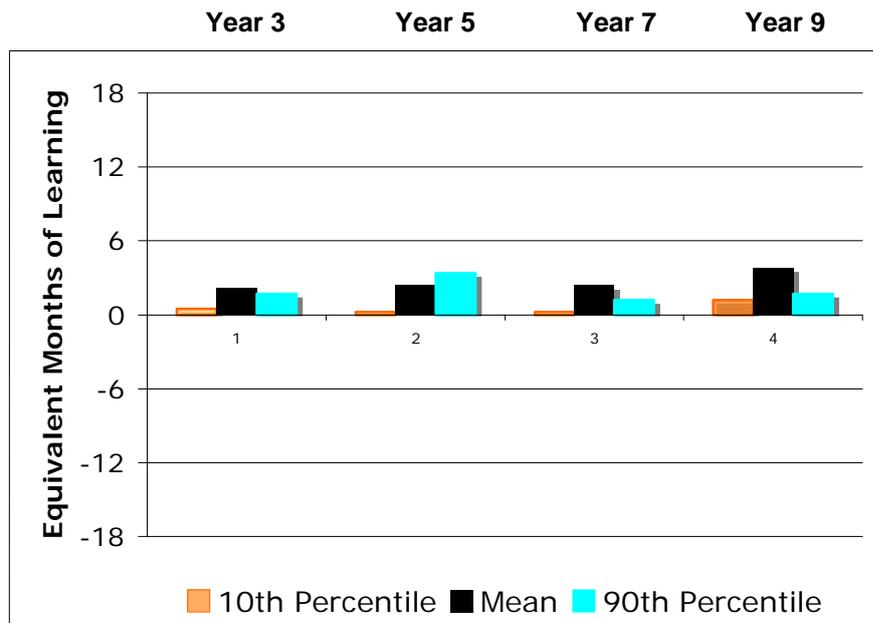
Figure 7 shows New Zealand asTTle data for boys and girls. This data independently supports the findings in Figure 6 of no differences in achievement of any educational significance on any of the Mathematics subscales normally assessed.

Figure 7: Gender differentials in different components of mathematics skills (New Zealand data)



Australia

Figure 8: Differences in mathematics achievement for boys and girls (Victoria)

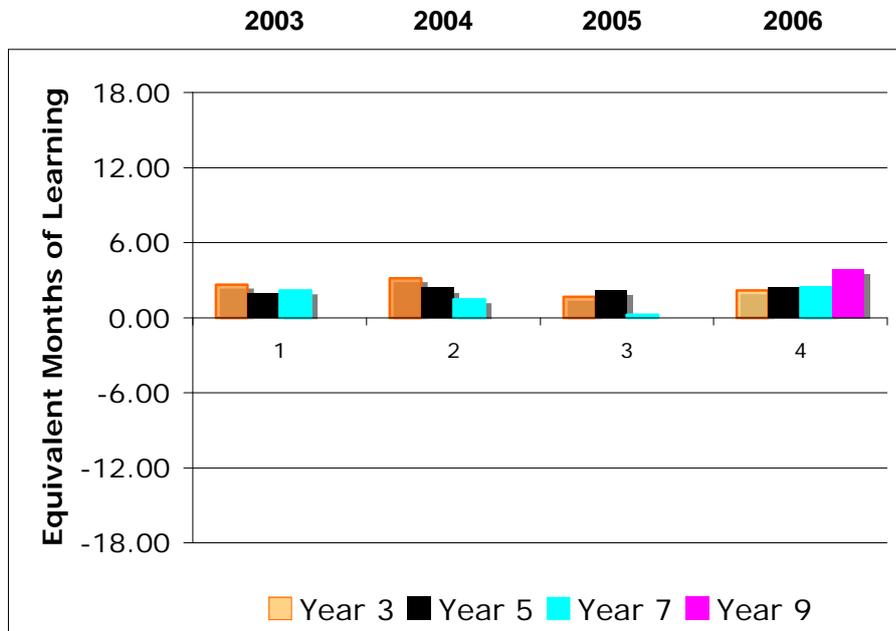


Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

The National Report on Schooling in Australia (MCEETYA, 2003) reported no substantive differences between the achievement of girls and boys in Years 3 and 5 in Numeracy: 95% of girls compared to 94% boys achieved the numeracy benchmarks in Year 3 and 91% of girls compared to 90% of males achieved the numeracy benchmark in Year 5. In Year 7, 82% of girls and 81% of boys achieved the numeracy benchmark

Figure 8 provides evidence about the differentials in the national benchmark mathematics assessments across Years 3–9 in the state of Victoria. Three different statistics are compared at each year-level: the difference in scores for boys and girls at the 10th percentile point, at the mean, and at the 90th percentile point in the respective distributions. Negative scores (ie. the bars below the zero-difference line across the centre of the chart) indicate that boys have lower scores than girls at this point in the distribution.

Figure 9: Trends in gender differences in mathematics (Victoria)



Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

The differences in the distribution for boys and girls in Mathematics are small in Victoria, with boys achieving at 2–4 months of learning higher than girls at each point in the distribution. The 25th percentile point of the distribution is less than a month of learning above that for girls at Years 3, 5, 7 and 9. The 50th and 75th percentile points of the distribution are 2–4 months of learning above those for girls.

The data presented in Figure 8 is for 2006. Figure 9 is based on the mean scores for boys and girls over the period 2003–2006 — thus it allows us to ask whether the differences in achievement between boys and girls in the state of Victoria have been increasing or shrinking over time. The difference in the mean scores for boys and girls in Mathematics shows a stable pattern, with boys achieving 1–3

months of learning higher than girls. There is no evidence of the gap widening or closing as students proceed through the stages of schooling.

The PISA 2003 findings of 15 year-olds in Australia also indicated that there were no gender differences in the mean scores for boys and girls in mathematics overall, nor were there gender differences within states and territories. However, there were gender difference in the distribution of achievement—almost twice as many males as females achieved the highest PISA proficiency level. Gender differences were also found in the subscales for space, shape and uncertainty, where males scored higher than females.

Australian data for the scale score in mathematics, science and problem solving in PISA 2003 mirror the findings of no substantive gender gap (OECD, 2004). The gender differential in Australia for the mathematics overall score in the Third International Mathematics and Science Study (TIMSS) was 0.18 in favour of boys, although girls scored marginally higher in Algebra, as well as in data representation and analysis, and probability.

Achievement in Literacy

There is a range of understandings of literacy, consequently evidence of achievement in literacy is often interpreted in different ways. Corresponding to the complexity of literacy, are different types of evidence that inform the debate on boys' achievements. Scores on achievement and diagnostic tests for reading and writing, offer different kinds of evidence from teachers' assessments which often include aspects of the processes of literacy and the behaviours associated with becoming literate.

Gender differences between boys and girls in literacy achievement have been identified as emerging in early primary school and, compounded by other factors, persist into high school (Commonwealth of Australia, 2002). The New South Wales Inquiry into Boys' Education (O'Doherty, 1994) found that boys were over-represented in special language and reading classes. More boys than girls are identified as being 'at-risk' of poor progress in literacy and that 20 per cent of referrals to paediatricians in tertiary referral hospitals relates to boys with poor achievement in literacy (Rowe & Rowe, 1999).

Various reasons are cited for boys' poor performance in literacy: behavioural factors; developmental differences; a predisposition for boys to favour the mathematical and logical in preference to language-based modes of thinking; genetic differences such as cognitive impairments, and the 'feminisation' of primary teaching (Commonwealth of Australia, 2002). Rowe (2000c) argues that the observed gender differences in performance are due also to increasingly higher levels of demand for operational literacy in schooling—particularly reflected in curriculum design, curriculum content, and the way it is taught and assessed in the secondary schooling years. He cites, in particular, a higher level of operational

skills verbal reasoning and written communication skills as being required in current schooling. 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 socialization advantages (Rowe, 2000c:3).

However, not *all* boys are underachieving in literacy. The *Boys: Getting it Right* (Commonwealth of Australia, 2002) report points out that 'boys' lower average achievement is a function of the fact that a higher proportion of boys compared to girls are performing at middle to lower levels of achievement.

New Zealand

Figure 10 provides estimates of the gender differential on a range of literacy measures for New Zealand students. The gender differential on all of the 40 literacy measures is in favour of girls. The mean effect size across all measures is -0.24. The mean for the measures of Reading is -0.27; Listening -0.08; Viewing -0.12; Speaking -0.17, and -0.33 for Writing.

The measures in the international studies included in Figure 10 are all for Reading. The mean score for these Reading measures is -0.37 and it is -0.27 for the measures based on NEMP assessments, which are aligned to the New Zealand curriculum.

The NEMP data suggest that the gender differential for reading declines between Year 4 (mean ES = -0.21) and Year 8 (mean ES = -0.14), while the International assessments indicate that and that the gender differential widens between Year 5 (mean ES = -0.33) and Year 10/11 (age 15/16) (mean ES = -0.41).

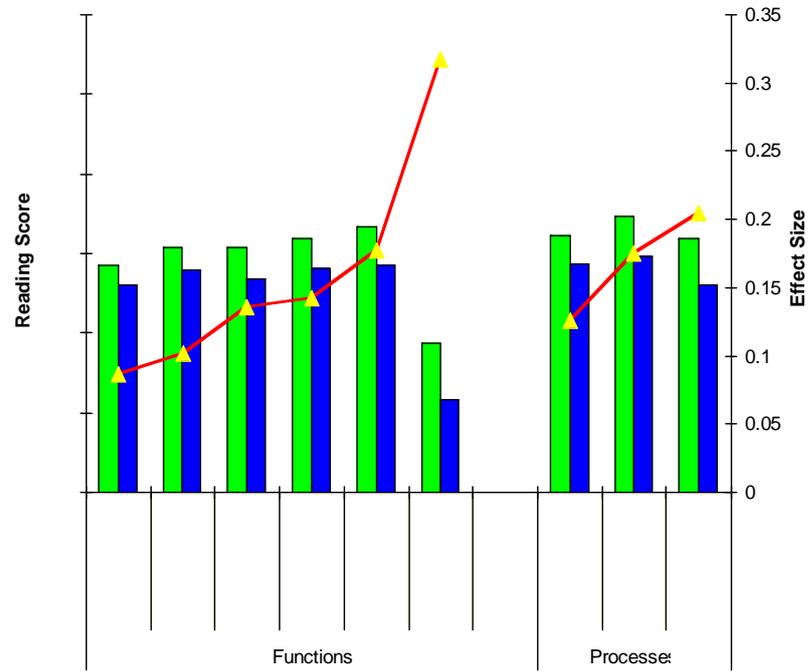
The Assessment Tools for Teaching and Learning (asTTle) assessment data for the early years of secondary schooling in New Zealand (Figure 11) indicates girls have substantively higher scores on only one component of Reading (Surface Features). However, Figure 12 shows that there are differences of substantive relevance in Writing between boys and girls in the functional areas of Punctuation and Spelling, and in the processing areas of Writing to Instruct or Persuade, Recounting, Explaining and Analysing.

Figure 10: Gender differentials evident in New Zealand literacy outcomes data

Curriculum Area	Year of Schooling	Differential in Favour of Boys ¹	Source
Reading Recovery	Age 6	66% are boys	RR ²
Reading	4	-0.17	NEMP 1995–98 ³
Reading	4	-0.22	NEMP 2004
Reading (Oral — English)	4	-0.23	NEMP 2004
Reading (Oral — Maori)	4	-0.20	NEMP 2004
Reading (Silent)	4	-0.22	NEMP 2004
Reading	5	-0.35	PIRLS 2001
Reading (narrative)	5	-0.44	PIRLS 2001
Reading (expository)	5	-0.27	PIRLS 2001
Reading (document)	5	-0.27	PIRLS 2001
Reading	8	-0.21	NEMP 1995–98 ³
Reading	8	-0.15	NEMP 2004
Reading (Oral — English)	8	-0.15	NEMP 2004
Reading (Oral — Maori)	8	-0.03	NEMP 2004
Reading (Silent)	8	-0.16	NEMP 2004
Reading	Age 15	-0.46	PISA 2000
Reading (Retrieving information)	Age 15	-0.29	PISA 2000
Reading (Interpreting texts)	Age 15	-0.43	PISA 2000
Reading (Reflection/evaluation)	Age 15	-0.57	PISA 2000
Reading	Age 15	-0.28	PISA 2003
Listening	4	-0.07	NEMP 1995–98 ³
Listening	4	-0.13	NEMP 2002
Listening	8	-0.07	NEMP 1995–98 ³
Listening	8	-0.05	NEMP 2002
Viewing	4	-0.11	NEMP 1995–98 ³
Viewing	8	-0.11	NEMP 1995–98 ³
Viewing	4	-0.19	NEMP 2002
Viewing	8	-0.06	NEMP 2002
Speaking	4	-0.16	NEMP 1995–98 ³
Speaking	8	-0.17	NEMP 1995–98 ³
Writing	4	-0.37	NEMP 1995–98 ³
Writing	4	-0.24	NEMP 2002
Writing (Expression)	4	-0.21	NEMP 2002
Writing (Functional)	4	-0.29	NEMP 2002
Writing (Conventions)	4	-0.17	NEMP 2002
Writing	8	-0.41	NEMP 1995–98 ³
Writing	8	-0.40	NEMP 2002
Writing (Expression)	8	-0.39	NEMP 2002
Writing (Functional)	8	-0.42	NEMP 2002
Writing (Conventions)	8	-0.40	NEMP 2002

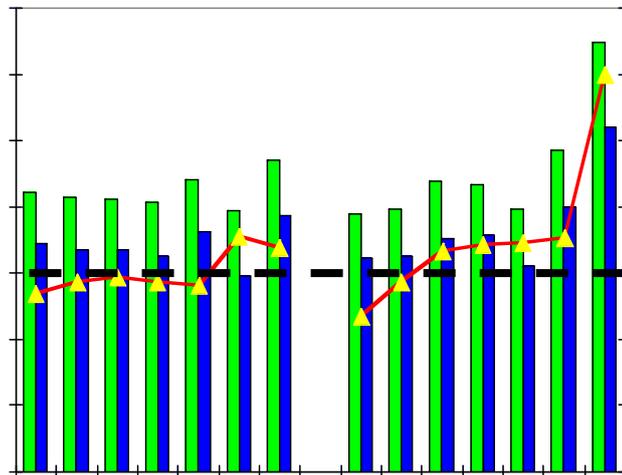
¹ Unless otherwise indicated, units are represented as Effect Sizes for (boys' mean – girls' mean), Annual Monitoring of Reading Recovery Report 2005², ³ NEMP data for 1995–1998 reported in Crooks & Caygill (1999).

Figure 11: Gender differentials^a in reading skills (asTTle data)



^a Girls are represented by the bar on the left in each pair in Figures 11 & 12.

Figure 12: Gender differentials components of writing skills (asTTle data)

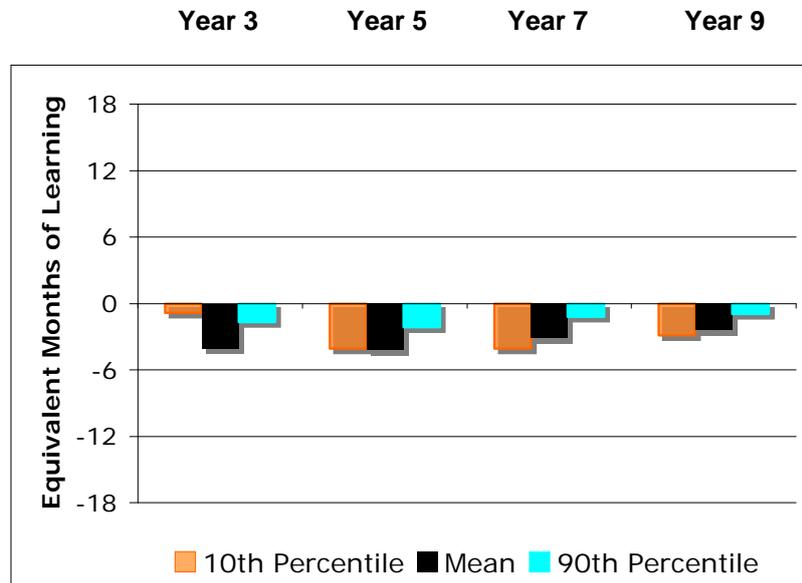


Australia

Results from the National School English Literacy Survey conducted in Australia in 1996 demonstrated that in Years 3 and 5 there is considerable difference between the literacy achievements of the lowest and highest achieving students. The highest achieving 10% of students at each year-level were about five years of learning ahead of the lowest achieving 10% (Commonwealth of Australia, 2005). On average, boys achieved lower scores than girls in all aspects of literacy—writing, reading, viewing, speaking and listening (Masters & Forster, 1997). The largest differences between the performance of girls and boys occurred in the expressive modes of writing and speaking, and the smallest differences occurred in the receptive modes of reading, listening and viewing (Commonwealth of Australia, 2002).

The National Report on Schooling in Australia (MCEETYA, 2003) for Australia reported differences between boys and girls in reading achievement at benchmarks for Years 3 and 5. In Year 3, 94% of girls achieved the reading benchmark in 2003, compared to 91% of boys. Similarly, in 2003, 92% of girls in Year 5 achieved the reading benchmark compared to 87% of boys. In writing, 95% of girls in Year 3 compared to 90% of boys achieved the writing benchmark, and 96% of girls in Year 5 compared to 92% of boys achieved the writing benchmark.

Figure 13: Differences in reading achievement for boys and girls



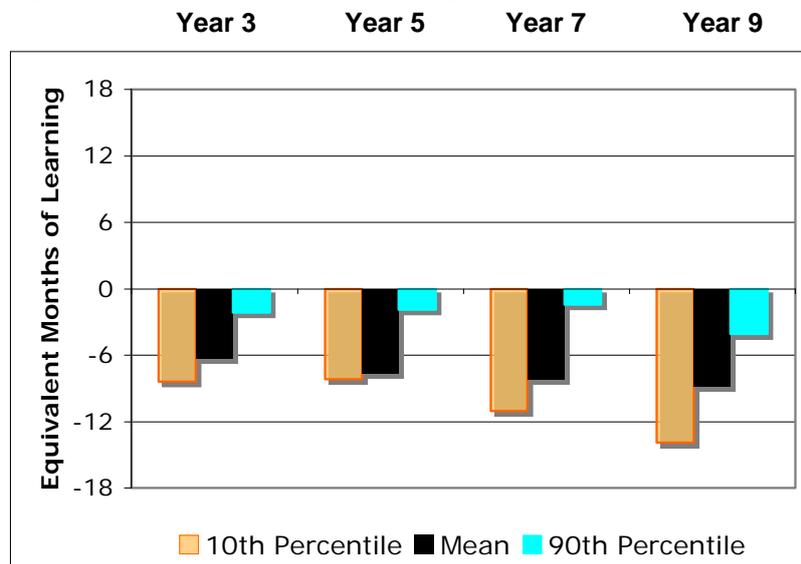
Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

In the reading benchmarks in Years 7: 92% of girls achieved the reading benchmark compared to 87% of boys. In writing, 95% of girls achieved the writing benchmark, compared to 89% of boys. Year 7 students with language backgrounds other than English achieved the

benchmarks at rates significantly lower than the overall population in reading. However, in writing they achieved at rates close to the overall population.

In Reading (Figure 13), boys have lower scores than girls at each point in the distribution, ie. the 10th percentile, mean, and 90th percentile points are lower for boys than for girls. The difference between boys and girls in the *mean* score is 4 months of learning at Years 3 and 5; 3 months of learning at Year 7; and, 2 months of learning at Year 9. Thus the difference in the *mean* level of achievement on the national benchmark tests is in the range of 2–4 months of learning. Whilst this is definitely not a zero difference, it is nevertheless relatively small when contrasted with the differences of 6–9 months of learning at the mean in Writing (Figure 14) and 5–8 months of learning in Spelling (Figure 15).

Figure 14: Differences in writing achievement for boys and girls



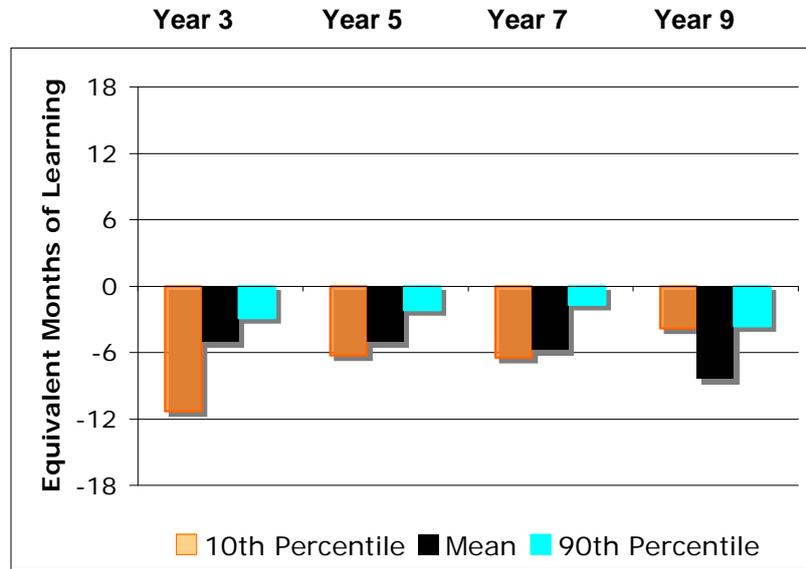
Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

The differences between boys and girls are largest in the lower tail of the distribution for Writing, that is, there are more boys than girls achieving at the lowest levels. This feature of the outcomes in Writing is consistent across Years 3–9. A similar pattern is evident for Spelling (except at Year 9), but is not evident in Reading. There are not significantly more boys than girls in the lower tail of the distribution for Reading, but there are fewer boys in the upper tail of the distribution.

In terms of differences in literacy outcomes, these data suggest that the main aspect of underachievement for boys is in Writing and Spelling, and that the differences in Reading are relatively small. In the primary years (Years 3 & 5) boys Reading scores are on average about 4 months of learning below those of girls, and in the secondary

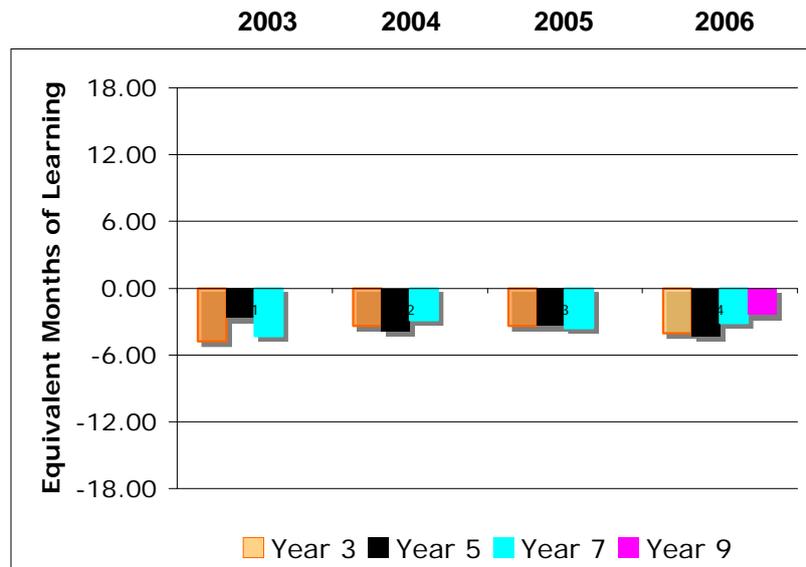
years (Years 7 & 9) this differential is reduced to three months or less.

Figure 15: Differences in spelling achievement for boys and girls



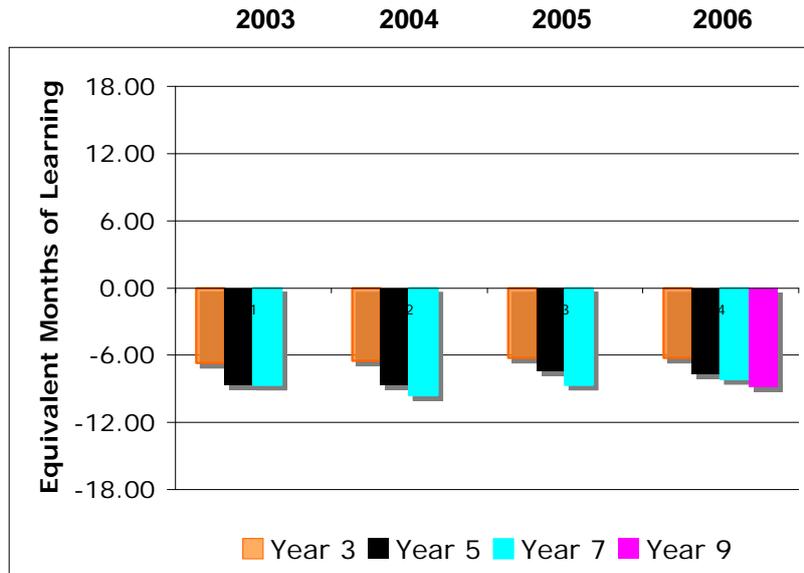
Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

Figure 16: Trends in gender differences in reading



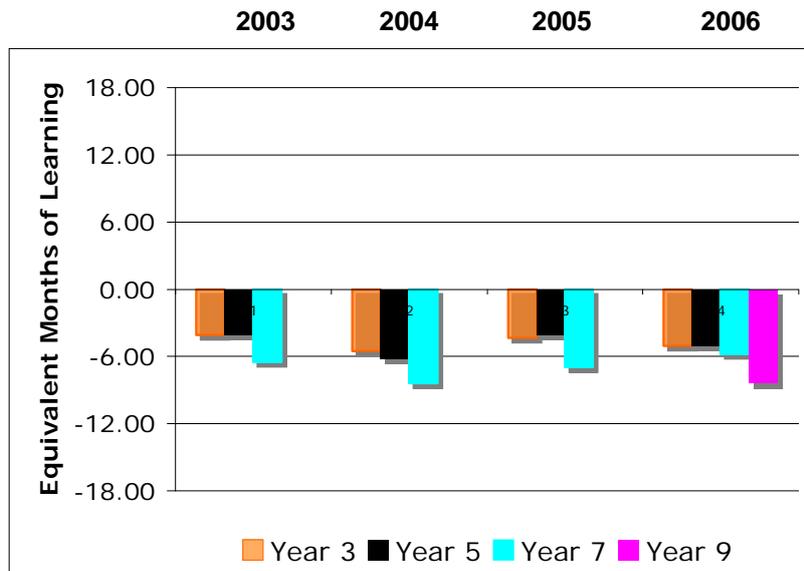
Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

Figure 17: Trends in gender differences in writing



Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

Figure 18: Trends in gender differences in spelling



Source: Cuttance (2006). What do we know about boys' learning? Australasian Boys Education Network.

The differences in the mean scores for boys and girls in Reading (Figure 16) at each year-level were relatively stable over the four-year period (2003–2006)—the mean score for boys was in the range of 2–5 months below that for girls at each year-level. There is no trend for boys to lose ground to girls over time at any year-level.

The differences in mean scores for boys and girls in Writing (Figure 17) and Spelling (Figure 18) over the period 2003–2006 were stable at each year-level. However, there is a pattern for the gap in the

difference between mean scores for boys and girls to increase at each stage of schooling—more so for Writing than Spelling—is evident in each of the four years. Thus, although there is no evidence that boys were losing ground to girls in Writing and Spelling over this four-year period, there is evidence that boys lose ground to girls in Writing and Spelling as they progress through their schooling.

ENVIRONMENTS AND PRACTICES THAT SUPPORT LEARNING FOR BOYS

Pedagogical Practices — Reading

Recent research has highlighted the limitation of viewing 'reading' as a singular concept and the consequences of privileging a limited range of traditional print-based texts for their perceived role in supporting the work of schools in shaping the moral and intellectual development of young men. Ignoring the role of multi-modal forms of reading preferred by some boys in the contemporary digital context runs the risk of alienating these boys from schooling. Boys need:

...more than the limited repertoire of texts made available through male youth culture...more than the restricted range of reading...such texts offer and more than the stories made popular through electronic game culture...and sport journalism. (Gilbert & Gilbert, 1998: 203)

Children's early reading experiences are differentiated in relation to gender (Martino & Berrill, 2003), with Millard (1997) providing evidence that reading is constructed in both domestic and school settings as an interest more appropriate to girls than boys.

It has been contended that schools do not value the types of literacy at which boys excel (Gilbert, 1998) and which is highly valued in the workplace (Mills & Lingard, 1997). Some argue for a curriculum which is more in tune with boys interests (Alloway, Freebody, Gilbert, & Muspratt, 2002; Hatchell, 2003; Love, 2003; Nilan, 1995; Smith & Wilhelm, 2002), which requires importing popular culture texts into the literacy classroom. However, Millard (1997) questions the relevance of selecting works of fiction that appeal to boys' expressed interests. Rather she suggests that teachers should be more critical of school's dependence on book-based learning in general, and fiction in particular.

Hamston and Love (2003) analysed the leisure time reading behaviours of 11-17 year-old boys identified as good and committed readers. They explored the role parents played in the enculturation of their sons into reading practices. Analysis of the types of guidance that parents offer, collectively and separately, identified the investment (resources; time; emotional; intimacy) that parents (largely mothers) *continue* to provide for their sons. The portrait of mothers was in contrast to the boys' reports of the increasing importance of their fathers as role models for their reading practices (Hamston and Love 2000; Love and Hamston 2003).

Research by Bardsley (1991) in New Zealand found significant differences in reading habits, attitudes and interests in 4th and 6th Form students. At both levels, girls enjoyed reading more, read more, bought more books, went to libraries more, and were given more books and book-tokens than boys. The recommendations from the research included using book-flood strategies, providing daily silent reading and reading spaces, developing records of students' silent

reading, liaising with parents, and establishing better networks among teachers.

Pedagogical Practices — Writing

Gilbert (1998) argues that some boys see the way in which writing is taught in schools as 'feminised' practice and needs to take account of how social construction of masculinity influences boys' learning and attitudes to literacy (Alloway & Gilbert, 1997a; Collins *et al.*, 2000a; Connell, 1996; Gilbert & Gilbert, 1998; Kenway & Fitzclarence, 1997; Lingard & Douglas, 1999; Mac an Ghaill, 1994, 1996).

Martino (1995a,b) investigated how masculinity is constructed as a monolithic category in an English lesson. By asking boys to respond to selected texts such as *The Altar of the Family*, Martino found that the majority of the boys did not resist the way the text positioned them. Martino recommends that by using specific texts and adopting specific pedagogical practices, alternative masculine and feminine identities can be raised and discussed in a way that leads student to explore their own positions within dominant discourses. Davies (1997) argues that a 'critical literacy' approach that examines and critiques film, TV, newspapers, magazines, novels and texts in terms of their construction of gender would improve boys' literacy engagement and make their own construction of masculinity visible and explicit.

In their review of the literature on boys and writing Alloway *et al.* (2002), found that boys write less than girls, and that they write about different topics. The review also found that boys are more likely to be engaged in electronic modes of literacy practice. However, Hansen (2001) found that Year 11 boys and girls in New Zealand did not perceive writing to be an inherently feminine or masculine activity. Hansen's study indicates that intrinsic satisfaction is a major influence on writing achievement for boys.

In a practice-oriented investigation of 24 schools in Queensland, New South Wales and Tasmania, Alloway *et al.* (2002) found teachers observed that boys showed a general lack of interest in print-based reading and writing activities and that boys expressed interest in electronic and graphic forms of literacy practice. They recommended broadening the repertoire of literacy-related materials to include a range of cultural genre, including contemporary youth culture and a wider range of modes of expression, including oral, written, electronic and visual. Multimodal texts and technologies in particular were identified as supportive of the development of boys' literacy skills.

Enhancing Motivation and Engagement

Students' academic motivation is fundamental for successful learning (Wentzel, 1997) and schools are instrumental in developing and sustaining academic motivation (Watt, 2000; Wentzel, 1989). Researchers of achievement motivation attribute motivational orientations to intrapersonal cognitive processes (Bandura, 1986). Wentzel (1993) identified three types of evidence that have linked students' classroom behaviour to academic achievement: (a)

relations between social and academic outcomes, (b) teachers' preferences for students as a possible mediator between social conduct and academic performance, and (c) social behaviour as a direct independent predictor of academic performance. Studies have also linked interpersonal relationships between teachers and students to motivational outcomes (Wentzel and Asher, 1995).

Many studies have found that boys are more 'disengaged' than girls with schooling (Browne & Fletcher, 1995; Epstein *et al.*, 1998; Rowe, 2000b, 2001; Rowe & Rowe, 1999), and schoolwork (Commonwealth of Australia, 2002; Cresswell, Rowe, & Withers, 2002; Trent & Slade, 2001); are less motivated at school (Collins *et al.*, 2000a; Martin, 2003), and that retention rates are lower for boys (Collins *et al.*, 2000a).

A significant factor in boys losing interest and disengaging in the later primary and early secondary years is their perception that schooling is of little relevance to what they understand to be their future (Trent & Slade, 2001). In some cases the curriculum itself simply fails to make the link between content and skills and the potential futures of individual students, and in other cases boys have developed little or no conception of what their future might be.

The issue of relevance is highlighted for young people when they engage in part-time employment. In most part-time work environments, students are engaging in the adult work environment. When students are at school, however, they are not treated in the same adult way as they are in the work environment. As an example, in most schools a student 'would get into trouble' if they were to observe that a printer had run out of ink and took the initiative to go to the store room, locate a replacement cartridge, and replace the extinguished cartridge in the printer. They probably routinely do this at home, and if they do not replace the cartridge in a similar situation when they are at work in their part-time job, they are likely to be considered as not being 'up to the job'.

Repetitive work leading to boredom was one of the five most frequently reported difficulties experienced by boys at school in Years 7 and 9 in the ACT (Martin, 2003). Martin identified three strategies to effectively engage boys:

- practical, hands-on activities;
- positive feedback; and
- opportunities and responsibility for making choices.

Teacher awareness of students' learning styles and modalities (Coil, 1996) as exemplified by the Theory of Multiple Intelligences (Gardner, 1993) may be an important factor in providing effective support for boys to learn in different ways. However, the notion of learning styles as applied to sub-groups of the student population is problematic, because it focuses, in this case, on gender-based differences in learning styles, rather than, on the learning needs of individual boys. Further, Martino (2003) cautions that the reinforcement of learning styles can lead to overlooking the importance of addressing the literacy requirements demanded by

changing labour markets and the wider repertoire of skills required to engage in society at large.

Attitudes to School and Teachers

Attitudes to school across both primary and secondary school years shows that girls maintain a higher regard for school and learning than do boys (Dix, 2005). Slade (2002) argues that there is “mass disinterest, disaffection and a growing rejection not only of schooling, but of organised learning” (p.15). Slade and Trent (2000) present compelling evidence from boys who state that they do not value schooling; that schools expect adult behaviour, but do not provide an adult environment; and that achievement and success is too narrowly defined at school. In addition, schools are focused on preserving the status-quo and present too many contradictions and paradoxes, such as stressing the importance of making choices without providing meaningful opportunities to exercise choice (Slade, 2002).

In their study on 600 Year 9–11 boys, Slade and Trent (2000) found that the primary factor and paradox for most boys is that there are “*too many bad teachers*’ who either create or exacerbate their problems” (p.215). ‘Bad teachers’ reinforce their view of school as authoritarian and custodial in function and purpose. For boys, ‘good teaching’ is flexible and involves teachers, “professionally and personally... taking risks by listening, responding, respecting, trusting and valuing their students more than the rules, the policies, the legal precedents, their training, careers, the reputation of the school” (p.219).

Suggestions for improving boys’ attitudes to school include:

- a focus on goals and target setting (Noble & Bradford, 2000);
- engaging former boys in a mentoring program for current students (Lingard *et al*, 2002a; West, 2001);
- cross-age tutoring where more-able students assist students of less ability in multi-level classes (Lingard *et al.*, 2002a);
- wider use of outdoor programs (Lingard *et al.*, 2002a);
- providing teacher–mentors for underachieving students (West, 2001)

Effective Teaching

There is no evidence to show that New Zealand boys think and learn in any way that is fundamentally different to their counterparts in other Western countries, or that they learn in fundamentally different ways to girls. They may learn more or less than in other countries because the curriculum addresses specific issues differentially or because teachers use more or less effective strategies, and compared to girls they may have different interests and dispositions that engage them in learning, but the fundamental cognitive processes of learning are no different. For this reason, the core of effective practices in teaching boys is similar to that for teaching girls.

Few of the professional learning programs provided for schools participating in the Boys Education Lighthouse Schools Project

(Cuttance *et al*, 2006) were principally focussed on the core knowledge about effective teaching and learning. The current professional development modules that have been developed for the Australian Success for Boys Program are also weak on the dissemination of knowledge of teaching practices and strategies that have been shown to be effective in improving learning.

There is a danger in focussing on developing new and different teaching practices, rather than tuning known effective teaching strategies to the specific learning capacities and preferences of boys at each point in the spectrum of learners. Research in progress by Professor John Hattie based on meta-analyses of thousands of original research studies and dozens of different teaching strategies is marked by the very low incidence of statistically significant gender interactions—indicating that in most cases teaching strategies have similar impacts for both boys and girls.

The following is a brief synopsis of the international research on strategies that have strong support in the research literature. This synopsis is based on the work-in-progress by Professor Hattie, who has collaborated with a number of researchers to undertake systematic meta-analyses of the practices and conditions that influence student learning. Over the past 10 years, Hattie and colleagues have undertaken research that draws on 180,000 individual research studies covering most known strategies relevant to learning in the years of schooling. Collectively, the studies represent “50+ million students” (Hattie, 1999). The research uses a measure of impact known as ‘effect-size’ to evaluate the average impact on learning of each strategy.

An effect-size of 1.0 indicates an increase of one standard deviation, typically associated with advancing children’s achievement by one year...or improving the rate of learning by 50%...a [strategy with an] effect-size of 1.0 [would show an improvement in] 95% of cases...[the average outcome for students] would exceed 84% of the outcomes for students [not being taught via the strategy]. (Hattie, 1999: 4)

A benchmark of an effect-size of 0.4 is used as a cut-point to divide innovations and strategies into two groups—less effective and more effective. Thus, strategies that are capable of improving average learning outcomes by 3–6 months of learning were classified as successful.

The most powerful factors influencing learning are:

- critical innovations;
- feedback to students about their learning; and
- setting appropriate and specific challenging goals.

Critical innovation is “a constant and deliberate attempt to improve the quality of learning on behalf of the system, principal and teacher” (Hattie, 1999: 10).

Feedback to students is infrequent and often of poor quality in many schools. Of the 1800 or so minutes that students are in formal learning environments each week, less than 5 minutes individualised

feedback is provided by teachers to each individual student. Strategies that increase the level and quality of feedback can substantially improve learning outcomes. Quality feedback means “providing information about how and why the child understands and misunderstands, and what directions the student needs to take to improve (Hattie, 1999).

Setting appropriate and specific challenging goals means going beyond encouraging the student to ‘do their best’—the magnitude of challenge set by goals is the most critical component of goal setting (Locke & Latham, 1990). Students need to be informed “as to what type or level of performance is to be attained so that they can direct and evaluate their actions accordingly...feedback allows them to set reasonable goals...track their performance...[and make] adjustments [to] effort, direction and strategy...as needed” (Locke & Latham, 1990).

It follows from the above that school-based innovation projects that focus on feedback and setting challenging goals have very high potential to improve learning outcomes. Further, the most effective strategies apply across most areas of learning and at all stages of educational development. Boys who are at-risk have not reached the same level of educational development as their peers, but the principles of teaching and learning are the same for them as for all other students.

Figure 19: Practices that have a powerful impact on learning

Highly Effective Practices		Less Effective Practices	
Effect Size	Source of Contribution	Effect Size	Source of Contribution
1.13	Reinforcement	0.34	Higher-order questions
0.94	Corrective feedback	0.31	Computer assisted instruction
0.79	Differentiated homework	0.28	Same homework for all
0.76	Co-operative learning	0.18	Programmed instruction
0.50	Peer tutoring	0.18	Ability grouping
0.49	Teacher professional learning	0.06	Team teaching
0.46	Parent involvement	-0.12	Watching television for more than 10 hours/week
0.40	Tutoring		

Source: Hattie (1999)

At some stages of their cognitive and social development, students may need higher levels of critical feedback and different types of feedback — if they do not receive this at the required time, they are deprived of one of the primary resources they need for learning. Left

to their own devices they seek feedback from other sources, often exhibited as attention-seeking behaviour, otherwise known as 'playing-up' and being 'naughty'. The problem with their strategy in this case is that the feedback they elicit from peers, teachers and parents is not the type or quality of feedback required to support their engagement in learning.

The above critical features of effective teaching and learning are embedded in the strategies that teachers use in a range of ways. Most successful teaching strategies contain them to some degree. Figure 19 indicates strategies that can have a powerful impact on learning (effect size > 0.4) and those which have a smaller impact (0 < effect size < 0.4).

Tuning Pedagogical Practices to Engage Boys

The literature on improving boys learning contains a wide range of strategies with a focus on the following.

- Specific classroom approaches, such as delivering highly structured instruction and lessons; frequently changing activities; placing greater emphasis on teacher-directed work rather than 'group' work; positively reinforcing achieved outcomes; providing regular, personal interviews for the purpose of target-setting; and providing opportunities for extra tuition (Browne & Fletcher, 1995; Rowe, 2000a, 2001; Slavin & Madden, 2003; Slavin *et al.*, 1997; Tinklin *et al.*, 2001; Trent & Slade, 2001).
- 'Hands-on' learning through multiple modes (Alloway & Gilbert, 1997a, 1997b, 1998; Hall & Coles, 1997; Lingard *et al.*, 2002a; Martino *et al.*, 2004; Millard, 1997; Newkirk, 2000; Pinsonneault & Malhi, 2003; Simmons, 2001).
- Out-of-Hours Literacy support programs (Simmons, 2001).
- Practical strategies to address auditory processing problems: attracting the student's attention, using short sentences, maintaining eye contact and using visual cues, pausing between sentences and, repeating if required (Commonwealth of Australia, 2002).

A major issue for research is to sort out whether each of these practices and a host of other practices have a sound basis in research or practice and to assess the evidence for their effectiveness. There is also a plethora of popular untested ideas currently being promoted for addressing the needs of boys (Rowe, 2000c).

...too many strategies are put in place based on untested assumptions about what boys think, do and feel (MacDonald *et al.*, 1999:17)

...there has been little research, as yet, into the level of take-up of different strategies, the rationale behind the adoption of specific strategies, how various strategies have been implemented, and the extent to which the strategies have addressed gender differences in achievement (Sukhnandan *et al.*, 2005:1).

Sukhnandan *et al* (2005) sought to evaluate what works and what does not work for improving outcomes for boys by undertaking case-studies of schools that adopted one of three types of interventions:

- single-sex classes or groups at secondary level;
- mentoring and role modelling by adults, including teachers within the school, and other pupils, at secondary level; and
- additional literacy support from adult volunteers at primary level.

The investigation did not provide any strong indications that the strategies were helping to reduce gender gaps in performance as girls appeared to benefit as much as boys in many of the case study schools.

Many professional learning programs provided to teachers focused on the supposed higher levels of structure that boys require in learning to write, read and learn appropriate behaviour (Frater, 1997, 2002). The interpretation of the need for structure as being gender related is probably an error. The main research on structure in learning that is relevant is the role of scaffolding in learning. This research indicates that two important groups of individuals benefit substantially from high levels of scaffolding—learners who are novices in the field in which they are learning, and learners who have weak or under-developed skills in the executive management of their own learning (Bransford *et al.*, 1999). Interpreting the evidence that shows *some* boys have problems with their learning as *all or most* boys generally have problems with their learning, fails to recognise the fact that boys who have difficulties with their learning are most often both *novice learners* and *have weak executive control over their own learning*. As such, they are expected to benefit from high levels of structure in the learning process.

Once boys, and other learners, move beyond the novice stage in the field in which they are learning and also develop adequate executive learning skills to managing their learning, they can benefit from less structured learning environments. Teaching in a normal classroom is a very challenging task, because the span of student development represented includes the full range from novice learners to 'expert' learners. The continuum between the extremes of these two groups may represent up to four years of development during childhood.

The key point is that the need for structure in the teaching and learning process is not driven by the learner's gender. Boys in the lower tail of the learning distribution need a high level of structure to learn, but this is not because they are boys — it is because they are novice learners with an underdeveloped capacity to manage their own learning. For this reason, teachers need to provide a much higher level of attention and input for these boys than that required by their classmates.

There has been a vast growth in mentoring schemes that have involved an extensive commitment of time and energy by teachers, support staff and volunteers. In most cases, mentors were either recruited from outside the school or teachers who do not otherwise teach the mentee are assigned as a mentor. Target-setting embedded in mentoring can be very effective with disengaged boys:

- the boys understand better and own the reasons for target-setting;
- they perceive the mentoring scheme as supportive;
- they develop a better understand of expectations that are realistic and possible;
- the process can provide context where boys can be offered alternative images of masculinity (DFES, 2005).

Martin (2002) identified the following supporting conditions for successful mentoring programs for boys:

- clear guidelines and parameters for the mentoring relationship;
- mentors and students need to be matched to meet the specific needs of the student;
- background checks of mentors and issues related to duty of care need to be undertaken from the outset;
- mentoring should not promote unrealistic expectations;
- mentoring within the school must not be seen as socialising — it must be explicitly set-up as a learning environment; and
- the school at all levels must value the mentoring program.

FINDINGS FROM THE AUSTRALIAN BOYS' EDUCATION LIGHTHOUSE SCHOOLS PROJECT

This section considers the key lessons from the 51 cluster projects across the 351 schools involved in the Boys' Education Lighthouse (BELS) Project. A model of the factors that were found to be associated with successful cluster projects is developed as a way of integrating the lessons from the BELS project.

All of the BELS Clusters engaged in significant levels of professional learning and sought to directly translate this into improved practices for improving learning. However, relatively few Clusters focussed on the most powerful practices discussed earlier. Many Clusters utilised various forms of mentoring and peer tutoring to support learning for boys. Mentoring provides a specific form of feedback to the student in the context of them engaging in learning: "I am here for you", "I believe in you", and "I will do my best to help you achieve" (MacCallum, Beltman & Palmer, 2005).

A number of mentoring strategies that fit well with the findings from research on successful mentoring programs (Martin, 2002; Noble and Bradford, 2000; West, 2001) were evident in the BELS Projects.

- Year 12 boys mentored younger underachieving boys.
- Underachieving students chose a teacher mentor to talk to.
- Former students visited the school to encourage reading and/or to show pathways to academic success.
- Older boys listened to younger boys read.
- Boys engaged in paired writing sessions.
- Boys were paired with members of the local community.

Strategic Interventions

A large proportion of the BELS cluster projects focussed on specific sub-groups of boys, rather than the whole population of boys in the school. The specific sub-groups were in some cases the cohort at a specific year-level, or boys who had been identified as struggling with their learning, for example, in literacy, or boys who were disengaged from the mainstream of school life. Broadly, these sub-groups of boys can be referred to as either 'disengaged' and/or 'struggling' learners. In some, but not all schools, there was an overlap between these two groups of boys. There tended to be a high representation of boys from disadvantaged backgrounds in the group of struggling learners, however, the disengaged boys were drawn from across the socio-economic spectrum. A phrase that captured the issues for some boys was "cruising middle class and/or able boys doing just enough to get by".

Both the disengaged and the struggling groups of boys generally saw little relevance in what they were doing at school to their future lives. A paradox is that the curriculum itself appears to be failing to provide the opportunity for these boys to learn the relevance of the content of the curriculum to their future lives.

Professional Learning

Although schools in the BELS project did manage to source a wide range of professional learning, many had to resort to using consultants who provide programs that are based on knowledge that is not well supported by research. Most clusters spent a considerable proportion of their budget on professional learning activities, the most effective being those that integrated the professional learning activities into the process of developing their projects.

Boys' education, along with a number of other aspects of Australian schooling, tends to be at the mercy of a shifting and faddish set of understandings and beliefs about how to improve learning outcomes for students. This was exemplified, for example, in one of the early planning meetings for clusters in the statement "we've done student learning styles", as a way of dismissing the relevance of boys' learning styles to their learning.

The current crop of ideas around 'brain-based' learning strategies generally have little foundation in the research literature that they purport to be based on. They are mostly based on a leap-of-faith that interprets findings from brain scans as having a specific relationships to thinking and understanding. We do know some things, however. For example, the size of particular areas of the brain is not necessarily associated with 'brain capacity' in the relevant functional area. A common mistake is to interpret evidence of differences in brain size or electrical activity in male and female brains as indicating specific differences in mental capacities. Caution in interpreting such data is required, for example, there is good evidence that *expert* thinkers actually have fewer, not more, synaptic connections in certain areas of the brain than *novice* thinkers.

Towards an Integrated Approach to Supporting Boys Learning and Development

Almost all BELS cluster projects adopted a multi-strategy approach to improving learning outcomes for boys. Key elements in these approaches involved a combination of strategies that sought to address specific aspects of pedagogy, engage boys through activity-based learning projects, and often supported learning by either mentoring or role modelling strategies.

Cluster strategies that sought to improve the effectiveness of pedagogy were either implemented across the cohort of students at a specific stage of schooling, or were embedded into activity-based learning projects targeted at specific boys. Where they were implemented across the whole cohort, they generally were provided also for girls, and strategies that had a positive impact on boys' learning mostly had a positive impact on learning for girls also. A good example of such a strategy was the Writing program at Thornlands State School. This program sought to enhance student skills in writing in Years 5–7. The program was equally applicable to girls in the classes as it was to boys. The project improved the school's performance on the Queensland Year 7 statewide

assessments by 18% for boys and 15% for girls, against a statewide improvement of 9% for both boys and girls over the same period.

The Thornlands Cluster also implemented a student mentoring program in which boys from Year 9 taught reading to Year 5 boys, and Year 6 boys read to boys in the early years of their schooling. The Writing program addressed learning across all members of the cohort, whilst the mentoring component addressed the specific needs of individual boys.

Most activity-based learning in BELS involved out-of-classroom projects. A large number of the projects developed strategies that sought to incorporate physically activity into boys' learning environments. In addition, many engaged boys' by tapping into mechanical reasoning capacities — an area in which males have a general, although not large, advantage over females.

One of the significant lessons across projects is the impact that out-of-classroom projects had on the level of engagement for the target group of boys. Projects in which boys were required to apply for access to the program, particularly through a staged process involving a written 'expression of interest' followed by an interview, and ultimately, if they received an offer of a place, a contract to sign, created strong commitment from the boys that entered the program. Two factors are in play in this process: first, the process provided an authentic parallel to the relevant real world activity of applying for a job, and second, it provided an opportunity to scaffold the process of developing motivation and engagement in learning — via the application, selection, and contract process.

The activity-based projects sought to develop a learning environment in which basic skills such as writing, reading and numeracy provided the required underlying working knowledge — for example, students wrote letters to external organisations to obtain supplies of materials or to offer their services, and students searched the Internet for and then read workshop manuals.

Many projects required boys to work together, often with an adult male. These projects provided an authentic environment in which boys learnt that specific behaviours and rules had to be followed (some environments would otherwise have exposed boys to danger, such as danger of injury by misuse of tools), required collaboration to undertake joint work, and provided many opportunities to develop persistence and resilience by pushing boys beyond their normal emotional limits in a secure environment. They also afforded a much higher level of adult-student interaction than that available in normal classrooms.

Out-of-class activity-based learning programs were, in most cases, explicitly based around engaging boys in activities such as building shelters, repairing and reconditioning equipment (bicycles, motors, etc) and constructing mechanical and electronic devices (eg. go-carts and robots) or programs that sought to jointly address and integrate physical activity with emotional and attitudinal development. The latter programs involved challenging outdoor activities, often

incorporated into camping excursions, to develop emotional resilience.

These findings about out-of-classroom activity-based projects raise the question of which factors are responsible for their impact, and whether they are generalisable to other contexts. The main knowledge base available to address these issues is the research that has focussed on the efficacy of *Adventure Education*. Research has indicated that adventure programs have a significant impact on a range of cognitive and affective aspects of learning relevant to the development of boys. While only a small number of the BELS projects reached the intensity or included some of the key elements that are common features of adventure programs—mentally and/or physically challenging objectives, frequent and intense interactions involving problem solving and decision making—they did include other features, such as, a small group focus, nonintrusive leaders/supervisors, and “doing physically active things away from the...normal environment” (Hattie *et al.*, 1997).

A third variation of this strand of strategies focussed on boys engaging in physical performance through dance, drama, and music. A critical element of this variation was the incorporation of public performance, which provided opportunities to recognise the achievement of the boys involved. These performances were made in front of a wide range of audiences, including the boys’ school peers, parents, and the public at shopping centres, etc. Public recognition of the output of work undertaken by struggling and disengaged boys has the potential to impact positively on each boy’s sense of self-worth and self-esteem, a vital ingredient in the motivation required to learn in challenging contexts.

In a small number of cases, teachers sought to develop classroom programs that involved a higher level of physical activity. An example of the latter was the program developed for an all-boys Year 5 class at Bribie Island State School. The learning program in this case was built around four learning centres within the classroom, with students rotating around the learning centres every half hour or so.

The projects that implemented classroom strategies to enhance teaching and learning for boys sought to provide a more structured environment for learning in the area of literacy, in particular, and in the development and implementation of behaviour management programs. Most schools tackled issues of engagement indirectly, by seeking to improve the quality of teaching and of the learning environment. They took more notice of the interests of boys and identified and directly addressed their specific needs, for example, by recognising that individual boys had not acquired the foundational literacy knowledge necessary to understand the relationship between a picture and the caption below the picture. They also developed collaborative projects for boys to work on, often with adult males. Further, they sought to expand the repertoire of teaching and learning strategies used in the classroom, for example, by encouraging boys to build models, or present their understanding in a multi-media format.

In some clusters, they also sought to reassess the boundaries placed on students in terms of what is classified as *acceptable behaviour* and what is classified as *misbehaviour*. This issue is particularly important for students in the secondary years as many of them have part-time work outside of school and/or operate in a more adult orientated environment when not at school.

There was clear evidence in a number of projects that students who previously viewed themselves as *failures* were able to develop a sense of greater self-esteem and self-reliance as a result of activity-based learning projects. Further, a number of the projects were able to demonstrate much higher levels of engagement by boys in school leadership activities and in school awards programs by giving consideration to the factors that often impede boys' engagement in such activities.

The strategies implemented for the two different types of boys involved in the projects — struggling boys and disengaged boys — were often highly differentiated. Programs that sought to address the needs of struggling boys directly recognised that they were *novice* learners in a particular aspect of their learning and that they may have a poorly developed understanding of *how to learn*. Hence, these projects embedded a high level of structure in their learning environment and focussed on the fundamental skills and knowledge required for reading and writing, in particular. In many cases, these projects incorporated additional strategies within normal classrooms, but often supplemented this with one-to-one remedial tutoring and boy-to-boy mentoring.

Strategies developed to re-engage boys through activity-based projects engaged a small group of boys with a supervising adult, either a teacher or volunteer. Although, this involved the male adult providing knowledge to the boys, hence, contained elements of mentoring, there was a substantial element of role modelling, enacted through supervision and the development of a context in which boys could learn to work in a *male environment*.

Many such projects involved some volunteer support from males in the local community. The role of the adult males in these situations included:

- supporting a boy to undertake a project;
- working with a group of boys to achieve a group outcome, for example, building a motorised buggy, or carpentry projects;
- working with boys to repair bicycles and small motors;
- supervising boys on outdoor expeditions;
- creating a male environment to support engagement with older males;
- teaching boys performance skills, for example, in dance, drama, voice and music; and
- providing an opportunity for boys' to connect to their community by learning cultural and social history from elders (Cuttance, 2006).

Consolidating the Strategies

Three sets of practices were successful across a number of projects (Cuttance, 2006). The first is activity-based learning, in which students focussed on literacy, behaviour and social outcomes through hands-on 'workshop' programs with links to the real-world. The most successful of these involved community and industry collaboration that provided an opportunity for boys to gain a *taste-of-real-life*. Another successful variation of activity-based learning was programs that engaged boys in outdoor/adventure learning programs. These programs focussed on developing resilience, self-esteem and collaboration in a context of physical exertion and engagement in relationships with adult males.

The second set of practices included variations of mentoring and role modelling. The mentoring projects focussed on boy-to-boy mentoring, in which secondary boys *taught* upper primary boys to read, or upper primary boys engaged with lower primary boys by reading to them. Role modelling was involved in a number of projects in different contexts, but generally involved older males (most retired) engaging with boys of different ages in one of two contexts. The first context was one in which the boys and the role model engaged formally with each other in *workplace* type activities or adventure learning programs, and the second involved creating a *male environment* for boys to engage informally with adult males to engage in sport and other activities involving physical activity, such as dance and other forms of public performance.

The projects that involved role modelling, in most cases, involved boys working with adult males on a specific project, such as repairing bicycles, dismantling and repairing engines, rebuilding or constructing buildings of some type. In these cases the projects normally engaged more than one, but no more than a dozen—often many fewer—boys working with the adult male.

A variation to the role modelling strategy involved activities where schools invited boys to bring an older male to school on a regular basis. The boys and the adult males then engaged in a range of activities in a male-constructed learning environment for the boys. An outcome of these projects was an enhanced desire on the part of the boys to engage to a greater extent with male adults, particularly, their father or another significant adult male in their life. A variation to this was older men reading to or sharing stories of their own boyhood with boys in the primary years — an oral tradition that is much less in evidence than it was several decades ago, partly because a significant number of boys today do not have a meaningful significant adult male in their lives. As a result, they grow up with few opportunities to learn how to interact in male environments.

The mentoring projects provided opportunities for an older boy to engage in caring for a younger boy and to become the focus of respect for the younger boy. There was evidence in some projects that older boys who were otherwise disengaged from schooling were the ones who were most likely to engage actively in this process. Such boys probably do not receive the same level of constructive and

positive feedback for their achievements as other boys in the classroom who are achieving at higher levels, and the mentoring context may have been fulfilling an otherwise unmet need for these boys. The formation of strong interpersonal emotional bonds was evident between the older and younger boys in many mentoring projects.

Critical to the success of these mentoring strategies was detailed planning and training to ensure that both the older and younger boy fully understood their roles, and to ensure that they received the appropriate training and scaffolding to learn how to engage in the experience. Evidence across the projects indicated that an age difference of four to six years was appropriate to ensure that the two boys were able to establish an appropriate *modus operandi* that maintained their different roles. This age differential provided an environment that supported the separate roles, but at the same time allowed the boys to meet on common ground in terms of sharing experiences. It was critical that a purposeful learning environment was established and maintained, as opposed to a 'buddy' or play environment.

The third set of practices sought to enhance the learning environment in normal classrooms. The largest group of such strategies focussed on improving literacy outcomes for boys in the primary years. These programs developed more effective and more demanding writing programs, implemented more effective teaching and learning practices, and focussed on the interests of boys as part of the learning environment. Boys were given the opportunity to access and read books that were of interest and encouraged to read magazines and other literature in addition to the range of books normally found in school libraries.

Before proposing an integrated model for supporting boys' learning in the next section, a consolidated statement of strategies is provided below. Most of the cluster projects involved a high level of integration of strategies across the various areas of boys' needs. The Thornlands Cluster project in the southern outskirts of Brisbane provided an example of such integration. The Cluster developed a set of strategies in each of the following areas:

- social skills,
- mentoring,
- student leadership,
- teacher professional development,
- teaching resources, and
- writing.

These key areas of strategic development were targeted towards improvement in the following five areas.

STUDENT ENGAGEMENT

- daily purposeful writing
- emphasising fun and humour in poetry
- clear objectives

- clear limits and set lengths for writing
- short tasks, such as five-minute writing exercises
- learning to take risks with ideas
- modelling good writing
- sharing published writing.

STUDENT LEARNING SKILLS

- breaking tasks into smaller pieces
- use of graphic organisers
- incorporating graphics into published work
- personal writing records
- learning to rework own writing.

STUDENT SELF-ESTEEM & SELF-CONFIDENCE

- weekly school student/staff presentations and discussions of writing at school assemblies
- awards to recognise quality writing
- friendly, inter-class competition
- recognition of individual and group effort
- publication of class writing books and poetry collections
- celebration of achievements.

TEACHING SKILLS

- constructive feedback to students to develop their writing skills
- an active, orally-based, teaching style
- explicit teaching of writing skills
- development of a teacher toolkit of writing strategies
- workshops by visiting children's authors
- weekly monitoring of student progress and feedback to class teachers by school leaders
- written feedback and discussion at year-level teacher meetings.

Figure 20 enumerates a range of the types of practices that were associated with the improvement of learning outcomes for boys. The data highlights a key issue in the development of strategies for enhancing the learning environment for boys. The classroom-based practices for improving learning directly target specific literacy skills and knowledge. However, practices that are located outside of normal classrooms are likely to tackle the improvement of boys learning more indirectly — for example, improving boys engagement and behaviour is achieved not by targeting specific skills or knowledge, but by providing a more relevant and interesting context for learning, that is, the out-of-classroom practices were able to adapt more specifically to the needs of boys, and provided them with much higher levels of scaffolding in their learning, through mentoring, role modelling and tutoring.

Figure 20: Types of practices associated with improvement in learning for boys

Classroom Pedagogy	Activity-Based Learning	Mentoring/Role Modelling
Literacy — Reading		
<p>Small group activities — including guided reading of texts with a strong phonetic focus; spelling activities related to the phonetic pattern; re-reading of previously studied texts; and revision of phonetic patterns and spelling of non-phonetic high frequency words.</p>	<p>Assembling and dismantling small motors, finding faults, ordering parts, carrying out repairs, maintaining tools and working from manuals.</p>	<p>Year 4 boys partnered with a mentor from Year 11. The mentors were trained to develop questioning techniques to test comprehension of the younger boys.</p>
<p>Book Swap Club — designed to determine whether boys are motivated to read when they are in a community that promotes reading. Boys meet on a regular basis to share and discuss what they read.</p>	<p>Reading repair manuals and microfiche diagrams of motors, etc.</p>	<p>Year 6 boys who needed reading practice, read to Prep boys for half an hour every day — the older boys were trained to use appropriate strategies to engage younger boys in the story.</p>
<p>Literature Circles — boys chose their own reading material and took on specific roles — clarifier, illustrator, questioner, predictor, connector, and summariser.</p>	<p>Reading magazines and catalogues to choose from alternative items to be built.</p>	<p>Year 9 mentors managed a graded reading program for underachieving Year 5 boys.</p>
<p>Learning to Read – Reading to Learn — used scaffolding for teachers to interact with students around text.</p>	<p>Learning specific vocabulary and mathematical concepts by working on sail boats, transmitting distress signals, and using global positioning systems.</p>	<p>Older boys assessed the progress (running records) of the younger boy and discussed advancing the younger boy to the next reading grade with their teacher.</p>
<p>Billy Bear Diary Project — students took turns at taking a literacy backpack home for a weekend. The backpack contained a teddy bear, a digital camera and a class contract. Students took photos and shared their weekend with their classmates upon return to school.</p>		
<p>Learning the sounds of the alphabet —</p>		

students took home a digital camera and photographed items beginning with the focus letters. Photographs were then formatted on the computer and a song developed around the focus letters using a music software programme. Students then practised the song to learn the focus letters. A slide show was made of the collected images and classroom footage of the students working on the song. The song was then incorporated into the slide show as a presentation.

Literacy — Writing

Phono-linguistic approach to writing — using segmenting, blending and deletion skills. Individual whiteboards were used to encourage students to put 'pen to paper'.

Teaching of grammar — strategies such as sentence cut-ups and *think alouds* and the explicit use of grammar.

Reading and visual presentation of text — integrated use of two forms of text — film and novel. Two classes studied the film *Of Mice and Men* as text and two classes read the novel as text.

Use of a visual organiser to plan a narrative piece, using a story book to enhance presentation skills; use of computer voiceover for story-telling; use of digital camera and digital photos to illustrate a story.

Horticultural project — focussing on: instructional writing: "*How to make an organic vegetable garden*"; informative writing: "*The lifecycle of a Plant*"; and creative writing: "*My life as a Beetle*".

Writing implemented through a robotics project that integrated hands-on activities with electronic messaging, use of instruction manuals, procedural and reflective writing.

Using a laptop to document bike repair project — integration of text and visual material for presentation to others.

Drafting price quotations for commissioned work. Reading client requests and replying by letter.

Reading and documenting plans for the construction of items.

Children's authors were engaged as part of a creative writing program.

Grand dads 'yarning' to young boys about their own life as a boy — used as a stimulus to document local history by writing books and creating multi-media presentations.

Creating web-pages to document and promote a public exhibition of photos taken by students of local 'identities' and places of significance.

Using Think.com or email to communicate with other class in the school or in another country.

Dads as mentors to students in a hands-on project restoring a hut for the local military museum.

Code switching — translating Aussie slang into standard Australian English and being recorded whilst reciting two pieces of writing.

Implementing a program where students learn to listen to the sounds in speech and record words sound-by-sound. The three key phonemic awareness skills, blending, segmenting and phoneme manipulation, formed the basis of lesson planning.

SEER (Signpost, Evaluate, Evidence, Relate) — students were asked to write a 'Recount'; a scaffolding technique was then taught and followed by another 'Recount'.

Using drama to improve student engagement in literacy learning.

Writing to suppliers of equipment and parts to build a motorised buggy.

Community project "If the walls could talk"— boys wrote a play and songs to document Bendigo's goldfields history to the other schools in the cluster.

Refurbishing a disused room as a literacy centre. Building tasks included floor supports, raising and covering the floor, door and window installation, and paint finishing. Tasks included specification and estimations of building materials, ordering of materials, updating floor plans for school records, following school and Occupational Health and Safety procedures, including a video recording of the project and publicity and marketing.

Behaviour

ICT Mindtools and programming software to make games, such as Klik & Play, and GameMaker; and IHMC CMap Tools for concept mapping. Also included collaborative and reflective tools.

Motivating boys through: structured teaching, positive reinforcement and rewards, differentiated and inclusive curriculum, cooperative learning, and team teaching.

Social stories were used to explain and illustrate a situation that required an appropriate response from students.

Year 11 mentors assisted Year 8 boys with painting and drawing, helped younger boys to select suitable sites to photograph; and encouraged them to choreograph their own steps in the movement class.

Rock and Water program linked physical exercises with mental and social skills. Topics covered include: intuition, body language, mental strength, empathic feelings, positive thinking and visualising; and discussion of bullying, sexual harassment, and homophobia.

Explicit teaching, modelling and opportunities for students to learn and practice conflict resolution, self-management, and communication skills using the *Tribes* approach and *Friendly Kids, Friendly Classrooms*.

Pairs of Year 6 and Year 10 boys engaged in hands-on reconditioning of push bikes under the tutelage, supervision and guidance of retired men from the local community.

Engagement

Boys in the last year of primary schooling developed an ePortfolio of their work to show their learning to teachers they would have in the first year of high school.

Individually, or in groups of two to four, targeted boys undertook a task that involved creating a finished product in one particular area. The main areas were mechanical/automotive, computing, creative arts, performance and outdoor improvement.

Robotics with a focus on problem solving, taking risks, being physically active and engaging in social collaborative contexts undertaken with male community members.

Robotics —problem solving, taking risks, being physically active and engaging in socially collaborative contexts.

Year 9 mentors assisted primary school students with literacy.

Single-sex classes for boys with increased structure in lessons; informing students of the activities they will complete; increased use of modelling in the classroom; breaking down of lessons into smaller, quicker activities; and specific activities on specific days. Three strategies were trialled:

Community-building project – Year 8 boys worked on building jobs which included design, planning, estimating, quoting, ordering materials and following school and OH&S procedures. The boys also promoted and marketed their business through a website and advertised locally.

- highly specific, individualised goal setting in the areas of organisation, behaviour, literacy, numeracy, confidence and persistence;
- an incentive system to encourage organisation and observance of classroom rules;
- processes to focus on choice, by using matrices from which students chose tasks to complete.

Students, teachers, administrators and the external community worked together in an online simulated economy.

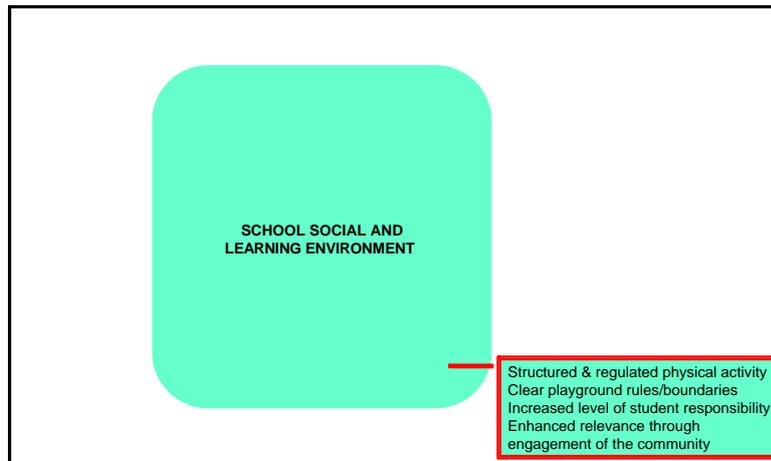
Enhancing school connectedness and

engagement — students worked in small groups of 6-8 with the same teacher leading most sessions, hands-on learning experiences focussed on boosting self-esteem and fostering skills of cooperation, teamwork and persistence. Workshop sessions included baking, craft and woodwork, with an emphasis on developing teacher-student relationships.

An Integrated Approach

The overall findings from the BELS project can be brought together in the context of the key findings from educational and related research. Figure 21 (a-d) below provides four sequential overlays of the environment of the school, the learning environment and critical external strategies that BELS schools demonstrated were effective in improving learning for struggling and disengaged boys.

Figure 21a: The base elements of a model for supporting boys' learning



Source: Cuttance (2006). What do we know about boys' Australasian Boys' Education Network.

The first of the four frames (Figure 21a) indicates the lessons for structuring and creating effective school, social and learning environments for boys.

Such environments include:

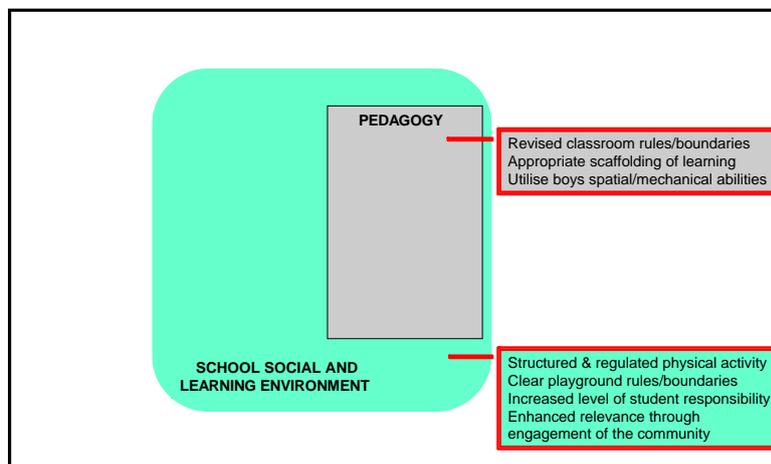
- *high expectations* for student's to take *responsibility* for their own actions;
- opportunities for boys to engage in a sufficient level of *regulated physical activity*;
- clear playground *rules* and *behavioural boundaries*—but with some flexibility—*engaging all students* in the formulation of the expected rules and norms of behaviour, including agreement about latitude to be provided and the discipline to be effected in cases where the rules are transgressed; and
- *engaging with the community*, including employers, so that boys of all ages can develop a grounded perspective of their potential futures, and through this to understand the *relevance* of schooling. (Cuttance, 2006)

The second frame (Figure 21b) provides an overlay of effective pedagogical approaches, including a core of the following practices:

- *classroom rules* that create boundaries of acceptable behaviour and incorporate some *physical movement in the learning environment*;

- appropriate *scaffolding of learning*, with high levels of scaffolding for students with underdeveloped learning skills and those below expected levels in the acquisition of specific knowledge; and reduced levels of structure in contexts where students can benefit from it;
- leveraging boys' *spatial and mechanical abilities* by providing opportunities to engage them in learning — for example, by allowing them to build models to demonstrate what they know; and
- classroom learning environments that are *less dependent on language skills*, particularly the written word, as their primary medium of communication through the use of ICT and multi-media technologies and alternative types of assessment, such as building models. (Cuttance, 2006)

Figure 21b: The pedagogy elements of a model for supporting boys' learning

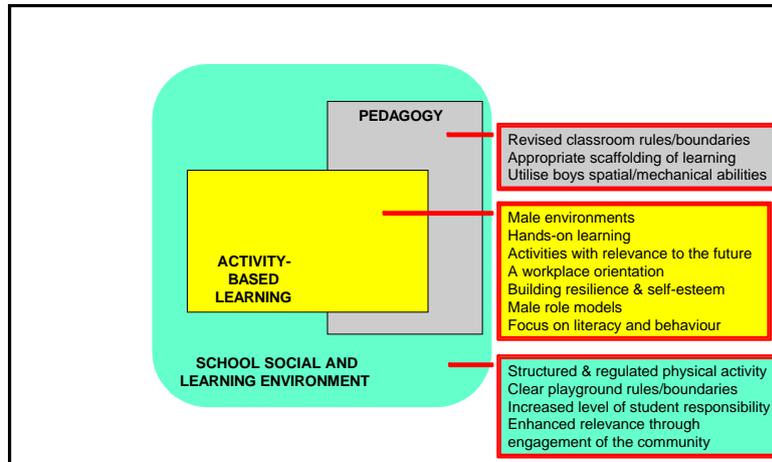


Source: Cuttance (2006). What do we know about boys' Australasian Boys' Education Network.

The third frame (Figure 21c) provides an overlay of activity-based learning for boys who are not fully catered for in the standard classroom learning environment. Such environments need to provide opportunities for boys to:

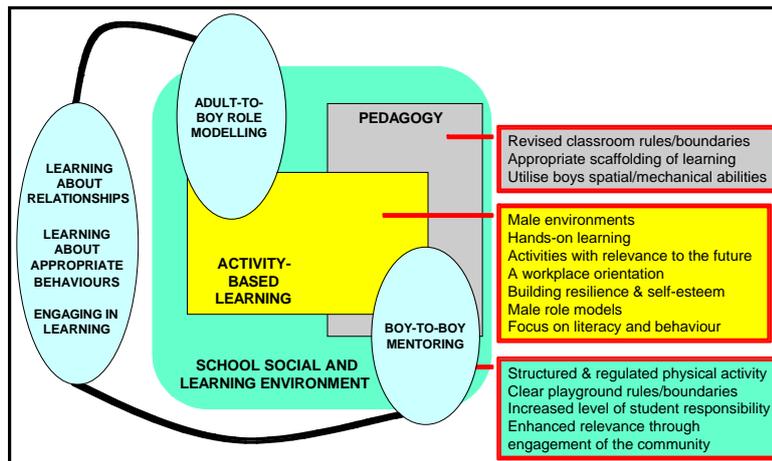
- learn about relationships in *male orientated contexts*;
- engage in *hands-on learning*;
- engage in learning skills and knowledge that are *relevant to each boys' future*;
- engage in learning in *workplace contexts* that integrate literacy activities and appropriate behavioural rules — many boys are prepared to accept *tighter discipline* in such environments, particularly, if they can understand the reasons for it, eg. workplace safety when using tools; and
- learn cognitive and affective skills and understandings to *build resilience and self-esteem* (Cuttance, 2006).

Figure 21c: The activity-based learning elements of a model for supporting boys' learning



Source: Cuttance (2006). What do we know about boys' Australasian Boys' Education Network.

Figure 21d: The mentoring and role-modelling elements of a model for supporting boys' learning



Source: Cuttance (2006). What do we know about boys' Australasian Boys' Education Network.

The fourth frame (Figure 21d) adds an overlay of additional external components to the learning environment. The broader school environment, the classroom environment, and activity-based learning can be further enhanced through the use of adult-to-boy role modelling strategies and boy-to-boy mentoring strategies.

These strategies are effective when they provide:

- opportunities for boys to develop *mutual respect* and *caring* for each other through *boy-to-boy mentoring*;
- appropriate *male role models* so that boys can learn about *rules* for working together, which may involve the supervision of boys by the role model as a co-worker;
- opportunities for boys to learn about *relationships* in contexts where they are required to engage with adult males,

- social environments for boys to learn about *appropriate behaviour in a male environment*; and
- a structure of expectations and norms that support boys to *engage in learning*.

DISCUSSION

This report has surveyed a range of matters in relation to the education of boys. We have sought to achieve two key outcomes — a clearer understanding of the evidence for differences in achievement in core curriculum areas for boys, and strategies and practices that have an evidence base that suggests they could be adapted successfully to improve learning for boys in New Zealand.

It is salient to reflect on the findings from the international literature, and New Zealand and Australian educational studies. First, in terms of education, gender differentials of any substance are not the prevailing reality, rather gender differentials appear to be specific to aspects of cognitive skills and to particular areas of the curriculum. Further, the most significant gender differences in the broader population are in non-cognitive areas — physical strength, aggression and levels of physical activity.

Contrary to popular belief, there is no broad evidence that boys as a group are achieving at levels below those for girls. In the areas of mathematics and science, there is no evidence of a gender gap in terms of mean achievement for boys and girls. This conclusion is supported by evidence from international studies (PISA, TIMMS, etc) and assessment programs that provide monitoring against the New Zealand curriculum. The evidence for New Zealand students closely mirrors the profile of performance in these curriculum areas in Australia.

In terms of literacy, there is evidence that the gender gap may be marginally wider in writing than in reading for New Zealand students. The extent of the difference in reading performance between boys and girls can be quantified as 3–6 months of learning. This gap does not appear to change substantially from mid-primary through into the mid-secondary years. The evidence does not indicate what the gap is at the end of secondary education as the assessments that are made at that stage include a range of skills beyond core reading and writing skills. The gender gap in achievement in reading and writing is wider on assessments associated with international studies, compared to those based on assessments that are designed to have a high level of alignment with the New Zealand curriculum.

As for mathematics and science, there are strong parallels in the New Zealand profile of gender differences in achievement in literacy in Australia. A critical component of differences in achievement literacy for boys and girls is the longer tail of achievement for boys. Marginally more boys than girls are to be found below the 10th percentile point for the distribution of achievement in literacy. This is reflected in the larger number of boys in early-years literacy intervention programs (eg. Reading Recovery) — however, it is fallacious to extrapolate from this to a conclusion that boys as a group are achieving at substantially lower levels than girls as a group.

The gender literacy gap can be tackled successfully by recognising that some boys need additional support, and that boys overall can be better supported in the area of literacy by taking their interests and dispositions into account in designing the curriculum and learning environment.

The BELS projects undertaken across 351 schools in Australia has substantially added to the knowledge-base for supporting boys who are 'struggling' with their schooling or are otherwise disengaged capable boys who are putting just sufficient effort to get over the hurdles — the challenge is to build this knowledge into the everyday practices of schools and classrooms. In most cases, the BELS projects provided an opportunity for boys to engage in the project for up to half a day a week in a context that integrated core elements of their main program—literacy and behavioural development, in particular.

It is not necessary that all aspects of the model developed from the BELS project to support boys' learning be incorporated into all aspects of boys learning environments. A large proportion of boys thrive in normal school learning environments—although most environments will be even more productive (for both boys and girls) if they include strategies embedded in the model.

The BELS project findings clearly indicate that students who are 'disengaged' in their normal classrooms can be intensely engaged in learning environments that have different boundaries for behaviour, expectations, feedback, rewards and relevance to boys' perceived futures. Further, the success of the BELS projects that developed activity-based learning environments for specific groups of boys, indicates that normal classroom learning environments need to be supplemented by external activities for some boys'.

BELS schools were correct to target specific sub-groups of boys as the focus of their projects. It is important that the message that boys as a whole are achieving at similar levels to girls, with some qualification in the area of literacy, be disseminated as we currently run the risk of boys, teachers and parents believing that boys are not learning as well as girls and indeed, that perhaps they cannot learn as well as girls. We will have a major self-fulfilling prophecy and an educational crisis on our hands if boys themselves come to believe that they have poor learning capacities.

Environments for learning will be more accommodating for boys if they explicitly focus on the evidence for real differences between males and females. Further, we need to understand the learning environment in schools in terms of the changes that have taken place over the last half century. First, curriculum and examination systems have generally become more language focussed (Rowe, 2000c). Second, school playgrounds have been systematically cleared of much equipment and other objects that allow substantial levels of physical exertion. Third, there has been a systematic shift in policy away from organised contact sports during school hours. Straw polls taken during the BELS project visits to clusters of schools suggest that less than a quarter of all primary schools in Australia now provide organised and supervised sports opportunities at play-break, lunch time or after school. Fourth, the behaviour rules and disciplinary structures of schools have over a long period of time moved towards favouring non-physical engagement and 'cooling out' all forms of aggression—including most components of competitive behaviour. Schools have developed a 'thou shalt not physically interact with other students' (or adults) culture in terms of the *rules* and *expectations* of what is permissible and what is not permissible at school. There are sound reasons for many of these developments, although few, if any, of the reasons make sense in

terms of supporting learning and the development of young people. Most often cited by schools is the necessity of removing 'risks' to reduce the possibility of litigation in cases where a child is injured or molested.

The boundaries that are set for acceptable behaviour in schools define what is *misbehaviour* — in many schools acceptable behaviour excludes physical contact in the classroom. During lunch hours and break, students are expected to engage in largely passive—or at least non-contact—activities. Students who engage in physically active games do so mostly without direct supervision, as for example would be exercised by a 'referee' — in such contexts some students are unwilling to take part because of the enhanced risk of being hurt or injured. A key role of a referee in enforcing the rules in organised games is to provide the controls and regulation necessary for *safe* play.

On average, males are about 25% heavier than females. Since males also have a higher average calorific intake in line with their greater mass, a higher level of physical activity is a necessity for males, compared to females, if they are to maintain equilibrium in terms of their body mass. International research confirms that males are on average considerably more physically active than females (ABS, 2004; Eaton & Enns, 1986), which indicates that there should be an expectation of a higher level of physical activity from boys, compared to girls, in schools. It is probable that this difference is the result of a mix of environmental, social and biological factors. However, regardless of the reasons for the difference, if boys they do not have the opportunity for the required level of activity, they are likely to have a heightened risk of health problems associated with obesity, be more 'restless', and less engaged.

Recent European research indicates that the equivalent of one-and-a-half hours of moderate activity daily is required to reduce cardiovascular risk factors to an acceptable level in children (Andersen *et al.*, 2006). The average child sleeps or rests for about 12 hours a day, sits passively in a classroom for an other four hours and spends 1–2 hours eating, leaving only six hours in which to engage in physical activity. If they spend one hour travelling to and from school — too often, using transport that displaces an opportunity to be physically active — and then watch television for 3–5 hours, it is evident that it is necessary to restructure opportunities for physical activity. Clearly, there is a need to consider how school environments might be reengineered to provide opportunities for both boys and girls to engage in the necessarily level and intensity of physical activity during the day.

The most successful of the BELS projects exhibited a clear set of characteristics (Cuttance, 2006). Complex multi-strategy projects had the most success — although this must not be interpreted as equating to a large number of strategies. The key to setting the grounds for success was an *integrated* set of strategies that *complemented* and *supported* each other. In many cases these built on promising strategies that the school was already implementing. However, projects that simply used their BELS funds to support a wide range of existing projects were generally not successful in demonstrating a substantial impact for boys. Two factors reduced the potential for success of the latter projects: a lack of integration and synergy across disparate strategies, and insufficient resources due to

the available resources being spread too thin to make a difference for the targeted group of boys.

One factor in relation to the latter is that by focussing on small groups of boys, schools were able to provide a level of resourcing per student that was sufficient to achieve an impact on outcomes. If, instead, these projects had focussed on all boys in the school, it is unlikely that the project would have impacted on the sub-group of boys who were struggling, and the impact on all boys would have been small. This is simply a consequence of the necessity to move above a threshold level of resource intensity if significant gains are to be made by students who are in the lower tail of the outcomes distribution.

In addition, the educational research literature clearly identifies practices that set *challenging goals* and provide *critical feedback* to a student's learning as the most powerful practice that can be used to improve learning outcomes (Hattie, 1999). A major dimension of the potential benefits of a high level of resource intensity, therefore, can be realised when the amount of time allocated to these two instructional practices is substantially increased, as it can be when the learning environment is focussed on a small number of students.

The concept of activity-based learning that has emerged from the BELS project could benefit from further exploration about how to make it even more effective, particularly for boys who are struggling with their learning or disengaged from schooling. The *adventure education* and the *work experience* literature provide two starting points for this further inquiry.

Overall, the practical lessons from BELS are as follows:

- the clearest overall impact was on boys' behaviour,
- projects that were able to clearly articulate their strategies had the greatest impact — clusters that undertook a trial as part of the planning and development of their project used this as a way of clarifying how specific strategies may work in practice,
- projects that had a primary focus on professional learning had minimal impact — professional learning has an impact only if it is translated into changed practice, and
- the most successful projects focussed on specific small groups of boys.

Factors that impeded projects included:

- the failure to turn professional learning into changed practice;
- mobility of teachers and principals who were the drivers of the project—a factor that is of much greater significance and prevalence than generally acknowledged—there was evidence that some schools were in a constant state of disequilibrium and flux as a result of staff movement;
- difficulties of collaborating across schools, particularly when timetabling issues arose;
- a lack of efficient processes to collect and analyse evidence and a lack of the required skills and knowledge to make sense of data — this was true of all forms of evidence, including learning outcomes data;
- over-reliance on informal (“I reckon”) teacher assessments of impact, without direct supporting evidence from students—teachers were more likely to claim a higher level of success for their projects than was

warranted by the evidence from more rigorous data gathering and analysis strategies;

- a cargo-cult mentality and an unwillingness to accept standard accountability processes by a small number of schools,
- a lack of facilities to accommodate activity-based learning at school, and
- the difficulty of implementing an externally funded project when the timeline is not synchronised with the cycle of planning activities in schools.

The BELS projects have substantially added to the knowledge-base for boys who are *struggling* with their schooling or are otherwise *disengaged but capable boys* who are putting *just sufficient effort to get over the hurdles* — the challenge now is to build this knowledge into the everyday practices of schools and classrooms.

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