
Questioning Gender

Snapshots from

*Explaining and Addressing Gender Differences in the
New Zealand Compulsory School Sector*

A Literature Review by Adrienne Alton-Lee and Angelique Praat

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NOTE: The ideas in this booklet (and in the literature review from which it is derived) are those of the authors and of the researchers whose work was reviewed, and do not necessarily represent the views of the Ministry of Education.

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Introduction

"... to make sense of gender differences we must ask: Which groups of boys or girls are we considering, from what ethnic groups and social classes, and in what subjects?"

This booklet presents 'snapshots' of research and ideas selected from a much larger document, a literature review covering the period from 1989 to 1999, entitled *Explaining and Addressing Gender Differences in the New Zealand Compulsory School Sector*, commissioned by the Ministry of Education.

The review was prompted, in part, by the widespread concern about the performance of boys in education, and was guided by three questions:

- What are the key factors contributing to gender differences in learning, participation and social outcomes?
- What strategies or policies have been used to address gender differences in learning, pupil participation and social outcomes?
- How effective have these strategies/policies been and under what circumstances?

The review of the literature¹ presents its findings in five major sections, as follows:

1. *Methodology*

This section explains, among other things, why the review used the curriculum areas as categories for organising gender-related research findings. Not only do gender processes vary by subject, but also many researchers claim that gender bias has affected the very content and nature of the subject disciplines. The chapter also explains why examining 'achievement gaps' can create a misleading picture, and warns against relying on overseas research when forming views on gender issues in New Zealand, in cases where local research is lacking. Some technical issues are also discussed.

2. *Gender policy in context*

This chapter outlines recent trends in several areas: incomes, occupations and educational qualifications of men and women; information about the intersection of schooling, gender and the 'knowledge economy'; theories of gender difference; and gender-related policies and thinking in New Zealand. It also discusses issues of educational expenditure, teacher education, teacher workload, and the 'market model' in New Zealand education, all of which have implications for gender-related policies in schools.

3. *Curriculum*

The seven curriculum chapters cover Science, Mathematics, Language and Languages, Arts, Technology, Health and Physical Education, and Social Sciences. The chapters examine gender-related research in a number of areas: achievement, participation and attitudes; subject content (sometimes including texts); pedagogy and classroom interactions; assessment; single-sex teaching arrangements; identity formation; self-efficacy beliefs; 'learning styles'; teachers' attitudes, actions and education; and theories and pedagogies that seek to address gender-related issues. The chapters draw on both overseas and (where available) local research, and refer to the scanty data concerning Maori, Pacific and Asian boys and girls in our schools. Where possible, the data is further broken down by ethnicity and social class. In addition, the chapters refer to gender differences in subject-specific knowledge, skills and preferences, such as mapwork in the Social Sciences, attitudes in mathematics, and competitive activities in Physical Education.

4. *Gendered behaviour in schools*

This chapter deals with data about truancy, suspensions, bullying and violence. It also discusses theories that seek to explain gender differences in student behaviours, and the implications of these for student well being.

5. *Synthesis and Implications*

This chapter summarises some major themes in the preceding chapters and discusses the resultant implications, including the role of, and possibilities for, research.

¹ When the present booklet mentions 'our review', it is referring to the document *Explaining and Addressing Gender Differences in the New Zealand Compulsory School Sector*. Similarly, when the booklet has in-text references such as 'See Chapter Two', it is referring to the same review.

"We were in the school band and they would really take the piss, saying we were girls because we carried round violins and that."

(Mac an Ghail, 1994, p.60)

See Chapter 7 of the review.

'It does not make sense to suggest that women teachers cause boys' poorer performance on literacy tests when the same teachers teach boys who outperform girls in social studies.'

See Chapter 12 of the review.

In addition... '... more able students have significantly more access [to computers than less able students; male students have significantly more access than female students both at home and at school; and students from affluent backgrounds have significantly more access than students from less affluent backgrounds and [being female] is a barrier to access across all social levels at home and at school.'

(McKinnon, Nolan & Soler, 1989, p.1)

See Chapter 8 of the review.

'... being 'staunch' was enforced by verbal and physical 'hassling' by some members of the first XV (in the single-sex school), and by 'surfies' and 'metallars' (in the co-educational school).'

(Rout, 1992, p.171)

See Chapter 11 of the review.

'... change requires whole-school policies that include curriculum reform, inclusive pedagogy, better disciplinary practices, diverse extra-curricular activities, staff and student exploration of gender issues, and the valuing of diversity in cultural, gender and personal identity.'

See Chapter 12 of the review.

What is 'gender'?

See the review: pages 293 to 315.

Our review uses the term 'gender' in two ways. For statistical purposes, 'gender' refers simply to 'males' and 'females'. In other contexts, 'gender' refers to beliefs about gender. This is because we see gender as:

... more than biological differences between men and women. It includes the way those differences, whether real or perceived, have been valued, used and relied upon to classify women and men and to assign roles and expectations to them. (Ministry of Women's Affairs, 1996, p.7)

Beliefs about gender are often attached to activities. For example, the research suggests that many boys believe that reading is an activity 'for girls'. Consequently, we use 'gendered' as an adjective, as when we refer to reading as a 'gendered' curriculum area. Gendered associations pervade work, leisure, language and knowledges, as the research in our review makes clear. Even colours and shapes can have gendered associations.

Today, it is increasingly clear that 'being male' and 'being female' can be fluid and changing, as is shown by the recent entry of many New Zealand men and women into occupations not previously associated with their gender. Many gender stereotypes do not match reality, an interesting example being the stereotype exposed in *Loose Canons: Exploding the myth of the 'black macho' lad* (Sewell, 1998).

Why do gender differences exist?

Our review discusses in detail six commonly used theories that claim to explain gender differences, and outlines both their nature and the common criticisms that each has received. These six theories are briefly introduced here.

Males and females are made that way?

Essentialist theories hold that male and female behaviours are immutably different because of biological differences that produce a universal essence of masculinity or femininity. A 19th century hypothesis was that males are more intelligent because they have bigger brains. A current theory holds that men have an essential masculinity (inherited from Cro-Magnon man) that is denied by modern life, causing a rupture in their psyches (Biddulph, 1997). Some feminists claim that a universal femininity exists.

Essentialism has been called into question by growing evidence, not only that gender-related behaviours vary between cultures and over time, but also that behaviour is similar between genders and is diverse within each gender (Gilbert and Gilbert, 1998; Jones and Jacka, 1995; Kenway *et al.* 1997a, b). Also, chromosomal differences appear to be more complex and ambiguous than was suggested by earlier research in genetics (Gilbert, 1997). Male dominance of violent crime does not seem to be explained by essentialism, since some researchers have found that women, when provoked, are as likely as men to be aggressive (Bettencourt and Miller, 1996, cited in Gilbert and Gilbert, 1998).

Essentialist explanations for gender differences in achievement are invalidated when those differences disappear. This appears to be happening for verbal abilities, at which girls have been thought to excel, and in spatial abilities, at which boys had tended to outperform females (Jacklin, 1989; Linn and Hyde, 1989). Similarly, Hacker's essentialist hypothesis to explain Australian boys' superior science achievement was invalidated when girls' science achievement exceeded that of boys in Victoria (Hacker, 1991, p.444).

QUOTE FROM THE REVIEW *We currently celebrate the entry of increasing numbers of young women into what were the high-status professions of law and medicine, professions which require of their practitioners a huge knowledge base... Middle-class young women are moving into these professions at a time when middle-class men are not entering them, but are instead moving into the information technology, financial and investment sectors. These sectors are distinguished by their valuing of 'risk-taking', 'creative' and 'innovative', or 'breaking set' behaviours (behaviours associated with competitiveness and aggression, and therefore with masculinity). (Gilbert, 1998, p.13)*

Gender behaviours are learned?

Social learning theories hold that sex-typed behaviour is learned through rewards, punishments and observing role models (Mischel, 1974, cited in Smith, 1996), but critics point to evidence that children create and police their own social rules (Bem, 1987).

In contrast, *cognitive-development theory* says that children actively organise their behaviour around their understanding of themselves as ‘a boy’ or ‘a girl’ (Kohlberg and Ullman, 1974, cited in Smith, 1996). At age two or three, children recognise their own and others’ gender, and acquire signs (such as clothing preferences) and behaviours that fit their own sex-role identity. By age seven, children realise that sex cannot be changed by changing superficial signs. Thus, children are thought to acquire cognitive structures through which they construct their gender identity by managing the information they encounter. For example, *gender schema theory* proposes that children learn society’s definitions of gender, and use the resulting filter (schema) of ‘masculine’ and ‘feminine’ to organise information they encounter (Bem, 1987).

Critics argue that cognitive-development theory fails to explain why sex is taken as the most salient difference for organising experience, why gender identity varies between cultures, and why children display gendered behaviours before they acquire knowledge about gender.

Social constructionist theories (Burr 1995) assume that knowledge (including knowledge of gender) is produced by interactions between people within specific cultures and times — including family, school and popular cultures. This assumption draws on the theories of Vygotsky (1978). It follows that students construct gender-related knowledge by linking new learning to their previous gendered experiences. Thus, teachers who use social constructionist theories will focus on the effects of the gendered learning environment rather than focus on individual boys or girls. Critics say that social constructionist theories fail to explain the complexities of gendered experience (for example, the fact that some men and women are ‘powerful’ in some roles but not in others) and fail to emphasise the importance of language and power — issues that are prominent in the next group of theories.

‘Who we are’ is decided by what we say and do?

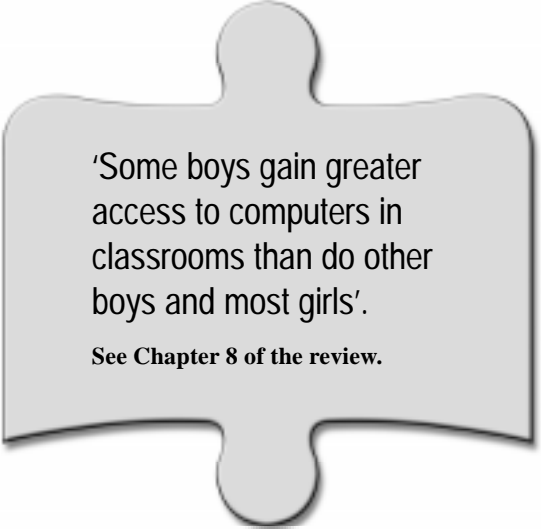
Post-structural theories share the assumptions of social constructionism, but also see knowledge and identity as products of (among other things) the language or ‘discourses’ found in particular cultures. Thus, post-structural theories hold that knowledge and identity stem from the concepts conveyed by conversations, stories, and messages promulgated through the media, advertising, schools and other institutions. However, individuals do not randomly *select* a gender identity but “actively take up *as their own* the discourses through which they are shaped.” (Davies and Banks, 1992, p.3)

One aspect of the power of discourses can be illustrated by the way we refer to the ‘opposite sexes.’ This is a language practice that sets up, as an assumed reality, the idea that ‘male’ is ‘not female’ — an oppositional binary that denies the extensive overlap between male behaviours, abilities, dispositions and genetic structures, and those of females.

A vivid example of thinking within binaries was provided by a woman who reacted to the All Blacks’ failure to win the Rugby World Cup by writing a letter to a newspaper asking: “Have the All Blacks gone girl on us?” If we ‘deconstruct’ her question, we can see it as the product of three binaries: that male is ‘not female’, that losers are ‘not winners’, and that strong is ‘not weak.’ Such assumptions are thought to humiliate men (who must be ‘winners’) by positioning them as ‘girls’ (that is, as weak losers). Such binaries are also thought to be reinforced by power relations, as when boys get hassled for being ‘girls’.

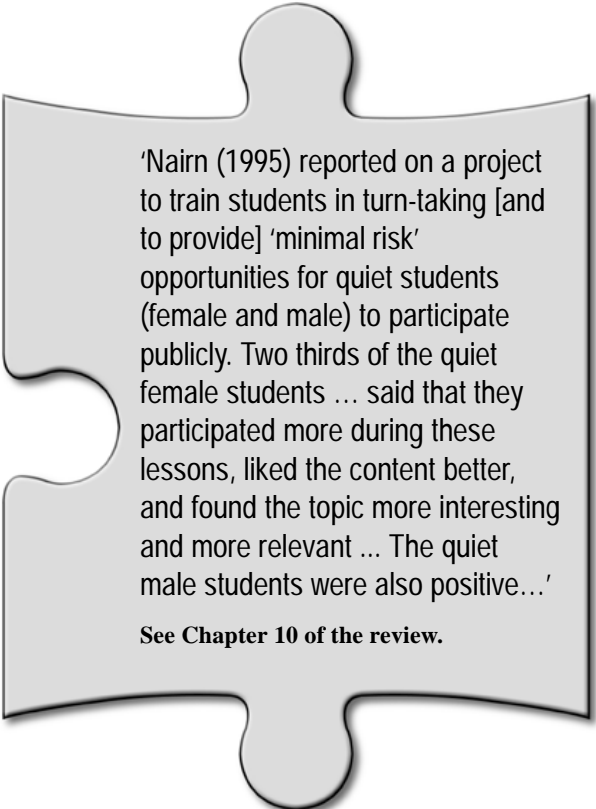
“HAVE THE ALL BLACKS GONE GIRL ON US?”
The discussion surrounding the All Black’s ‘failure’ of coming fourth in the Rugby World Cup forces us to ask questions: What does it mean for young men to grow up in a culture that is so intolerant of men ‘losing’? What does it mean for young women to know that, in itself, their gender constitutes an insult to their brothers and male peers? (See p.29 of the review)

Post-structural theories are controversial, but recent research shows that strategies based on these theories have been effective tools for change.



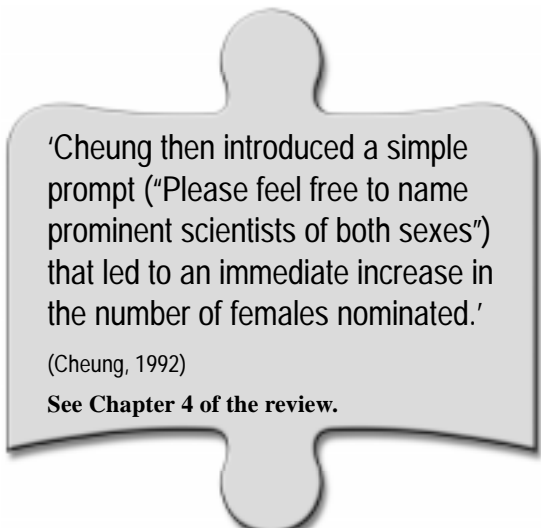
'Some boys gain greater access to computers in classrooms than do other boys and most girls'.

See Chapter 8 of the review.



'Nairn (1995) reported on a project to train students in turn-taking [and to provide] 'minimal risk' opportunities for quiet students (female and male) to participate publicly. Two thirds of the quiet female students ... said that they participated more during these lessons, liked the content better, and found the topic more interesting and more relevant ... The quiet male students were also positive...'

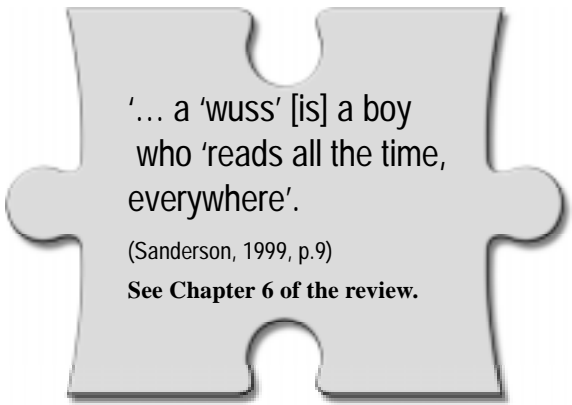
See Chapter 10 of the review.



'Cheung then introduced a simple prompt ("Please feel free to name prominent scientists of both sexes") that led to an immediate increase in the number of females nominated.'

(Cheung, 1992)

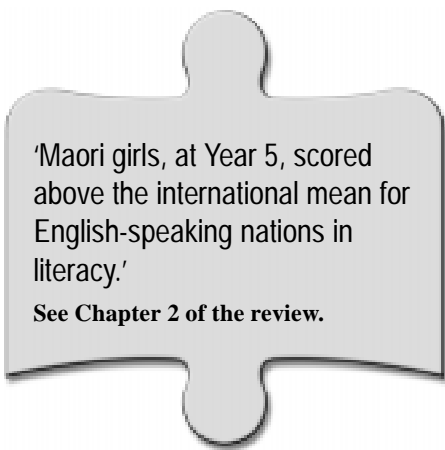
See Chapter 4 of the review.



'... a 'wuss' [is] a boy who 'reads all the time, everywhere'.

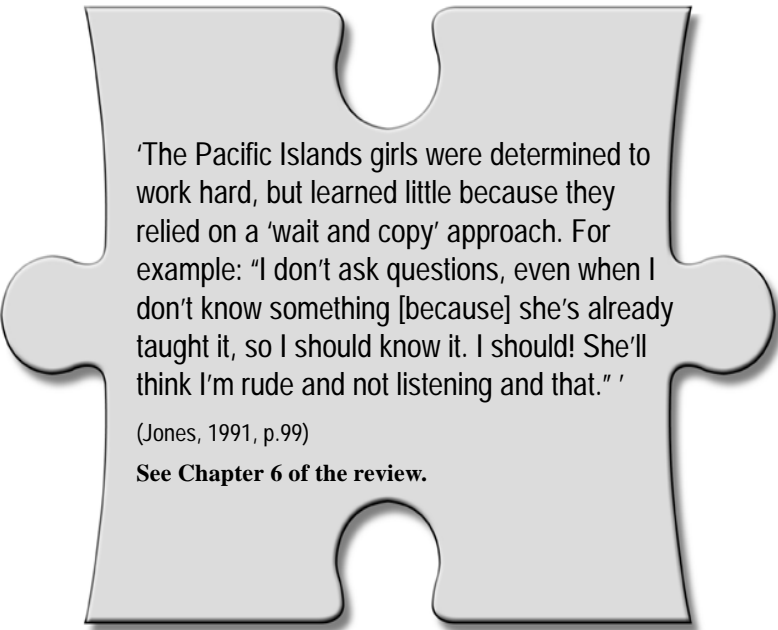
(Sanderson, 1999, p.9)

See Chapter 6 of the review.



'Maori girls, at Year 5, scored above the international mean for English-speaking nations in literacy.'

See Chapter 2 of the review.



'The Pacific Islands girls were determined to work hard, but learned little because they relied on a 'wait and copy' approach. For example: "I don't ask questions, even when I don't know something [because] she's already taught it, so I should know it. I should! She'll think I'm rude and not listening and that." '

(Jones, 1991, p.99)

See Chapter 6 of the review.

NEW ZEALAND YEAR 5 STUDENTS' (AVERAGE) MEAN PERFORMANCE BY GENDER AND ETHNICITY IN THE IEA THIRD INTERNATIONAL MATHEMATICS AND SCIENCE AND READING LITERACY STUDIES

Mean test scores	Mathematics (Year 5)				Science (Year 5)				Reading Literacy (Year 5)			
	NZ mean	Gender	Ethnicity	Gender and Ethnicity	NZ mean	Gender	Ethnicity	Gender and Ethnicity	NZ mean	Gender	Ethnicity	Gender and Ethnicity
560-569								Pakeha boys				
550-559							Pakeha	Pakeha girls				Pakeha girls
540-549											Pakeha	
530-539					New Zealand	girls				girls		Pakeha boys
520-529			Pakeha/	Asian boys Pakeha boys		boys			New Zealand			
510-519			Asian	Pakeha girls			Asian	Asian boys		boys		Māori girls
500-509		girls		Asian girls				Māori girls				
490-499	New Zealand	boys						Asian girls			Māori	Pacific girls
480-489				Māori girls			Māori				Pacific	Māori boys
470-479												
460-469			Māori				Pacific	Pacific girls/ boys Māori boys				Pacific boys
450-459												
440-449			Pacific	Pacific girls Māori boys								
430-439				Pacific boys								

The three black lines, from left to right, approximately represent the international mean for mathematics, science and reading literacy. It should be noted that the 'international means' shown by the black bars in the table are composite and scaled scores.

Note that the placement of each of the population categories is indicative only and does not necessarily signify statistically significant gender differences. See relevant curriculum chapters for details.

Gender gaps in achievement: Which boys? Which girls? Which gaps?

To illustrate the complexities of gender as it intersects with ethnicity, and to put it into an international context in terms of how our students perform internationally, prior to discussion of each of the curriculum areas, reference is made to the IEA Third International Maths and Science (Garden, 1997), and the Reading Literacy (Wagemaker, 1993) studies.

While we report gender differences it is important to remember that these are usually mean differences, and therefore they do not reflect the reality for all individuals within the group of boys or group of girls studied. Also, gender differences in achievement are generally small compared to the significant overlap in achievement between groups of girls and boys (see page 22 of the review).

Year Five children: literacy, science and mathematics

At first glance, the table opposite shows that Year 5 girls achieve far better than boys in literacy, a little better in science, and about the same in mathematics. However, crude data about 'gender gaps' can be dangerous. A closer examination of the table shows the need to ask our ourselves a more detailed question: Which groups of boys or girls, from what ethnic groups and social classes, are doing well or badly in what subjects?

International comparisons

The table shows that Year 5 boys and girls score well above international means in literacy, well below international means in mathematics, and are approximately equal to international means in science.

Ethnic differences are greater than gender differences

Achievement differed more by ethnicity than by gender. Pakeha children's achievement in all three areas exceeded that of other ethnic groups. However, while Pakeha children's achievement on average was higher than international means in literacy and science, it was behind in mathematics. In contrast, Maori children were close to the international mean for literacy but below international levels for science and, even more so, for mathematics. Asian children were slightly behind Pakeha students' performance in mathematics and further behind them in science (no comparable statistics were available for literacy). Pacific children were behind all other groups in all three areas, especially science and mathematics.

Gender differences within ethnic groups

Maori girls performed more highly than Maori boys in mathematics, science and reading literacy at the Year 5 level. Some gaps within ethnic groups were substantial. In reading literacy the results showed that Maori girls performed above the international mean in contrast with Maori boys who, on average, performed below the international mean. Pacific girls, on average, performed just below the international mean on reading literacy, whereas Pacific boys' performance was markedly lower. Pakeha girls also performed more highly than Pakeha boys at the Year 5 level although the gender gap was narrower in reading literacy for this ethnic group. In some subject areas, gender gaps within ethnic groups were not marked. For example, Pacific boys and girls had no gender gap in their low performance in science at the Year 5 level.

Science

See the review: pages 65 to 105.

Achievement differs more by ethnicity and social class than by gender.

New Zealand students' science achievement appeared to be similar to international means from middle primary level to the beginning of secondary school, but was well above average at Year 13, according to TIMSS data.

Year Four to Eight

At Year 4, gender differences in science achievement were minor. However, Year 8 boys outperformed girls by a 2.1 percent difference in means, with statistically significant gender differences favouring boys in earth sciences, physics and chemistry, according to TIMSS data. Similarly, National Education Monitoring Project (NEMP) results for Year 8 showed boys doing better than girls on almost a third of tasks. New Zealand's mean gender difference for Year 8 was 17, while the international mean gender difference was 14, according to TIMSS.

While there were marked differences favouring primary boys in science achievement, such differences were far less marked than achievement differences by ethnic group. In general, on NEMP and international measures Pakeha students performed more highly than Maori students who in turn performed more highly than Pacific students. However there were gender differences in achievement within ethnic groups. For example, at the Year 4 level in TIMSS, Pacific girls' and Maori boys' achievement was particularly low. NEMP data revealed that students in low decile schools (1-3) achieved at a similar level to Maori students.

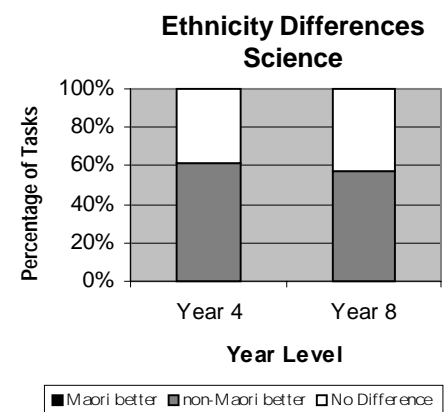
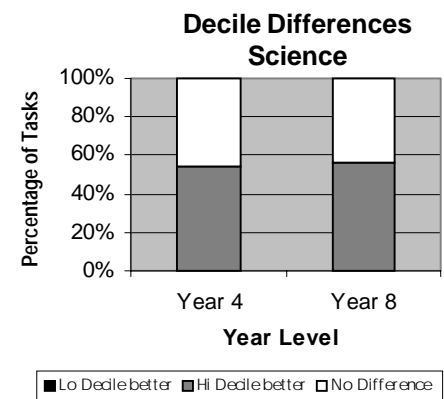
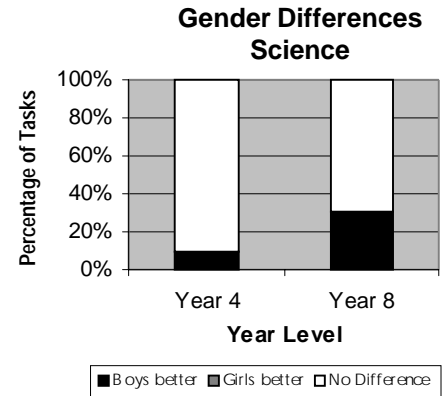
A comparable pattern was evident in the percentage of B grades and above in School Certificate, and performance in sixth form biology, chemistry and physics, in 1997 (Praat, 1999).

Senior secondary school

Overall achievement statistics show minor gender differences in senior secondary school science achievement; international data shows boys with a small lead, whereas New Zealand data shows girls as slightly ahead.

Far fewer girls study sixth form physics, but the relatively smaller proportion of girls who did take physics achieved a mean score of 63 percent — considerably higher than the overall mean of 50 percent. However, the results for Maori girls' were much lower — a mean of 47 percent. Both groups had means much higher than that of Maori boys (30%) Pacific girls (38%) and Pacific boys (21%). Thus, while the traditional pattern of boys' higher participation in physics is still evident, the pattern of boys doing better than girls at science has, in the case of physics, changed.

Gender differences in participation rates in senior science have been reducing, but physics is chosen by over twice as many males as females. Similarly, sixth form biology attracts almost twice as many females as males — a proportion that drops markedly in the seventh form. The relatively few Maori students who study science in Year 13 perform above the international mean. Pacific students perform well below the international mean.



The relatively few Maori students who study science in Year 13 perform above the international mean.

Mathematics

See the review: pages 107 to 147.

New Zealand primary students do relatively poorly at mathematics by international standards. Those who study the subject at senior levels do well by school leaving age. Achievement differs more by ethnicity and social class than by gender.

The mean achievement in mathematics by New Zealand students at Years 4 to 8 is below the international mean, regardless of gender, ethnicity or social class, according to TIMSS. However, those New Zealand students who complete schooling perform above the international average at school leaving age.

Years Four to Eight: Gender differences are minor, but vary by ethnicity

Mathematics achievement differs more by ethnicity and social class than by gender (see graphs). However, at school entry level, girls perform significantly better than boys (Gilmore, 1998). With that exception, the TIMSS data revealed that significant gender differences were found only at school leaving age, at which point males outperformed females in 18 of the 21 countries or education systems. However, among Maori and Pacific students, girls tended to do better than boys, whereas among Asian students, boys tended to do better than girls, according to TIMMS data.

Boys pull ahead at senior levels

While females achieved at higher levels than boys at Sixth Form Certificate level, males achieved to a slightly higher level in School Certificate, to a higher level in Bursary Mathematics with Statistics, and to a markedly higher level in mathematics literacy at school leaving age.

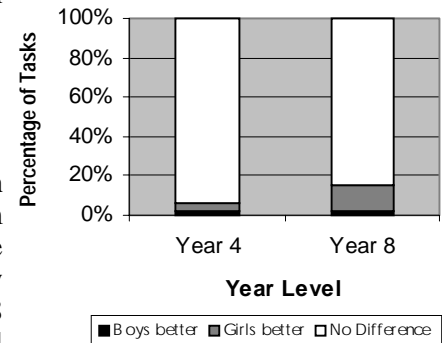
Areas of mathematical competence

Gender differences were apparent in different areas of mathematical competence, according to TIMSS. At Form 3, boys showed strengths in number sense, measurement, and complex procedures, and were more likely to attempt problem-solving questions, while girls showed significant improvement from their Form 2 achievement in algebra. By school leaving age, boys' relative strengths had become more pronounced.

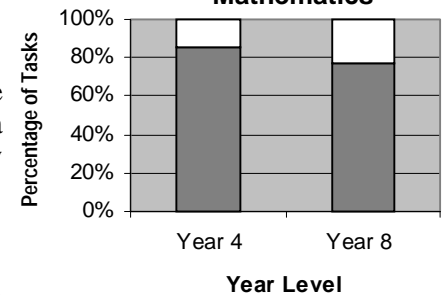
More boys choose mathematics in the senior secondary school

Mathematics was chosen for School Certificate in 1995 by similar proportions of boys and girls (70% and 69% respectively). This represented a marked increase in female participation since the 1970s. However, at Bursary level, boys were more likely than girls to take both Mathematics with Statistics (52% and 41% respectively) and Mathematics with Calculus (40% and 26% respectively). Maori participation rates in sixth and seventh form mathematics were 7 percent and below.

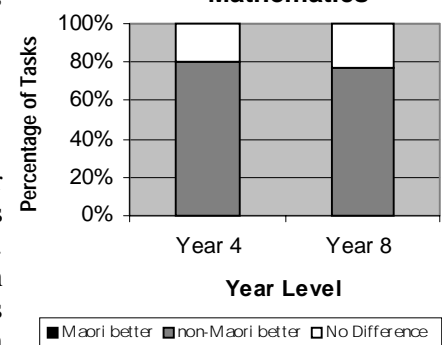
Gender Differences Mathematics



Decile Differences Mathematics



Ethnicity Differences Mathematics



Literacy and English

See the review: pages 149 to 175

New Zealand students read well by international standards — and have a larger gender gap in favour of girls at primary level. However, achievement differs more by social class and ethnicity than by gender.

In literacy, New Zealand students’ scores were the sixth highest internationally at aged ten, and fourth highest at age fourteen, according to the IEA study. New Zealand also showed the second largest gender difference at aged ten, with girls performing more highly. Gender differences in primary reading achievement have been apparent since the 1880s. There was no significant gender difference for 14-year-old students on the IEA study. Girls have been performing more highly than boys in secondary school assessments in English but the disparity has been decreasing over the decade. Boys make up two-thirds of those who need Reading Recovery.

Girls glean more information from print

Girls performed significantly better than boys on half of the NEMP reading tasks at Year 4, and on 64 percent of reading tasks at Year 8. Comparable results have been found on Progressive Achievement Tests of both Reading Comprehension and Reading Vocabulary.

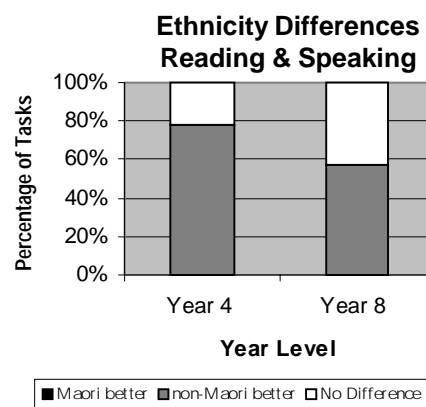
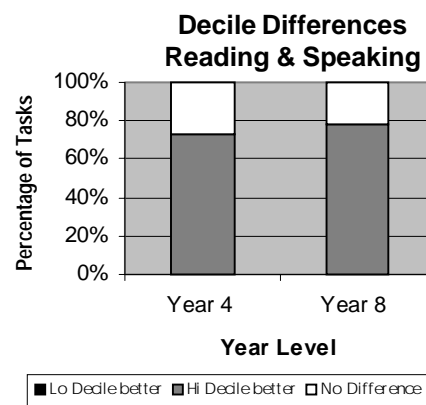
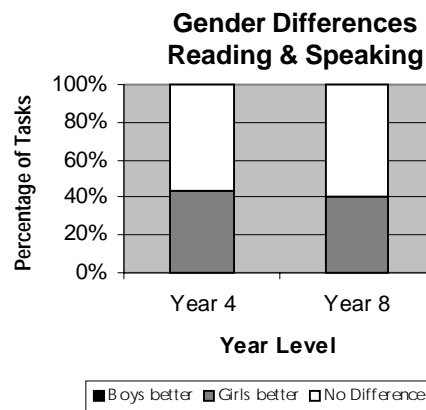
The latest NEMP findings for information skills show that girls do better than boys at accessing written information, a skill that is important across the curriculum. At Year 4, girls did significantly better than boys on six of the 20 tasks used, and at Year 8 there were significant differences on seven of the 26 tasks used.

More girls take English in senior secondary school, and they perform better

Praat (1999) found that approximately eight percent more girls than boys took the English examination in School Certificate in 1995 and that 12 percent more girls took English for Sixth Form Certificate. In the 1997 Bursary examinations, English was taken by most girls (64%) but only by a minority of boys (46%). Praat (1999) found that more girls than boys achieved A, B and C grades in School Certificate English, and that more girls than boys achieved grade 4 or higher for Sixth Form Certificate English from 1992 to 1997. While more girls than boys achieved B grades or higher in Bursary English from 1990 to 1997, the gender disparity has been decreasing. Girls’ higher performance was apparent in all three examinations and across all ethnic groups.

Ethnicity and social class

Achievement differs more by social class and ethnicity than by gender (see graphs). For example, at Year 4 level on NEMP tasks, Flockton



QUOTE FROM THE REVIEW Cummins (1986) reviewed a broad range of international research indicating that students achieved more highly when they had opportunities to learn within an environment that supported their indigenous or cultural language. When such opportunities were available and well-resourced, students not only did better within their own cultural language, but also their achievement within the language of the dominant culture within their country was higher.

and Crooks (1996) found significant differences by school decile level for 71 percent of the tasks, compared to 50 percent for gender.

Reading achievement differences by ethnicity are also marked. At Year 5 level, the difference between Pakeha students' mean performance and that of Pacific students was three to six times greater than the differences by gender, for items relating to documents, narrative and expository text (Wagemaker, 1993). The difference between the mean performance of Pakeha and Maori students was two to three times higher than differences by gender. At the Year 10 level in the IEA results, mean differences by ethnicity were marked while significant differences by gender were non-existent (except for narrative items).

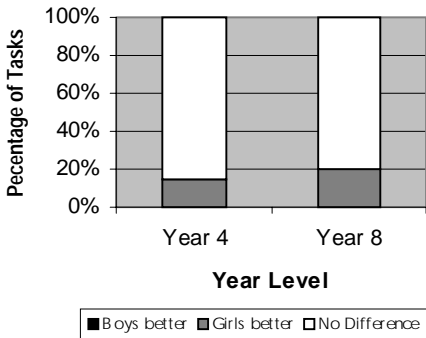
The Arts

See the review: pages 177 to 189.

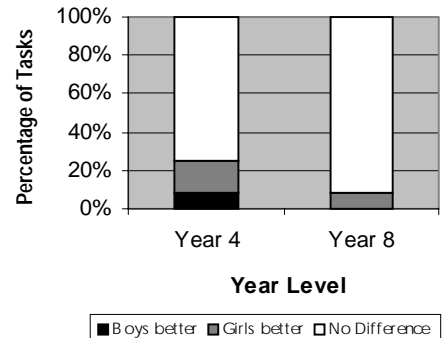
Research in achievement in the arts is scanty.

NEMP assessment results reveal few significant gender differences in performance in the arts in Year 4 to 8 and, unusually, there were no marked differences in performance by school decile level or ethnicity. However, music showed a different pattern. Girls performed significantly more highly than boys did on NEMP tasks, and the differences for school decile level were even greater, and showed an increasing disparity as the level of schooling increased. Maori students and students from schools with higher proportions of Pacific students performed significantly more poorly in music assessments on 25 percent to 40 percent of the assessed tasks.

Gender Differences Music



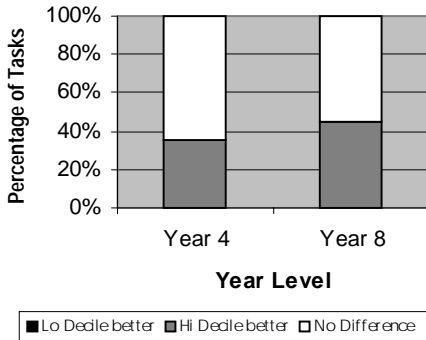
Gender Differences Art



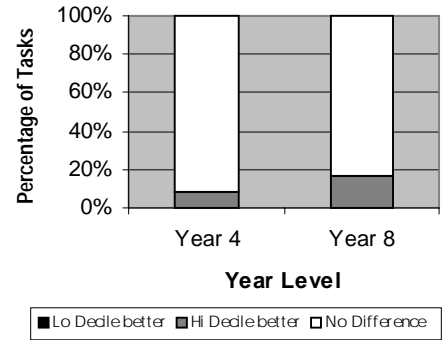
QUOTES FROM THE REVIEW:

- *Girls expressed a greater liking for music at school... and for singing and dancing/moving as musical activities at school... and also indicated greater involvement in musical activities in their own time... They were also involved in more formal musical activities (lessons, musical groups) outside of school. (Crooks and Flockton, 1997a, pp. 49-50)*
- *At the secondary level, girls appear to participate more highly in the arts overall than boys do. However, Pacific and Maori boys participate at higher levels than other boys.*
- *Maori students reported statistically fewer opportunities to play musical instruments at school.*

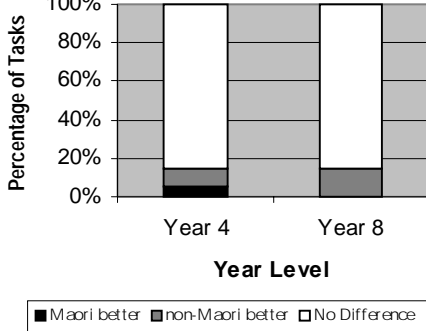
Decile Differences Music



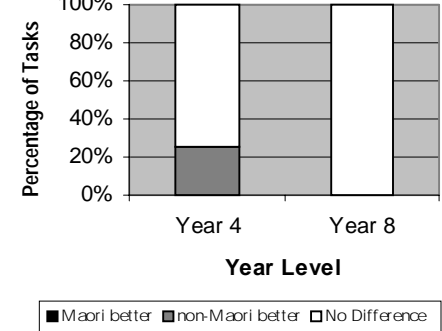
Decile Differences Art



Ethnicity Differences Music



Ethnicity Differences Art



Technology

See the review: pages 191 to 214.

Recent changes in the technology curriculum have attempted to confound the traditional gendered patterns of participation, but there is evidence that these are persistent.

Primary and intermediate levels

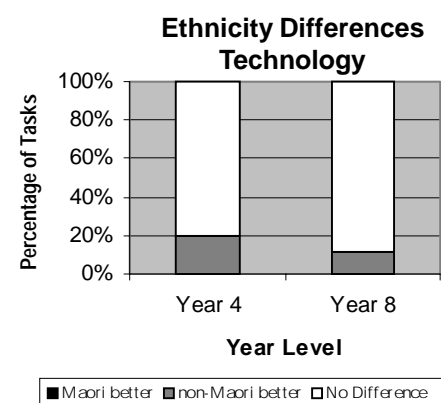
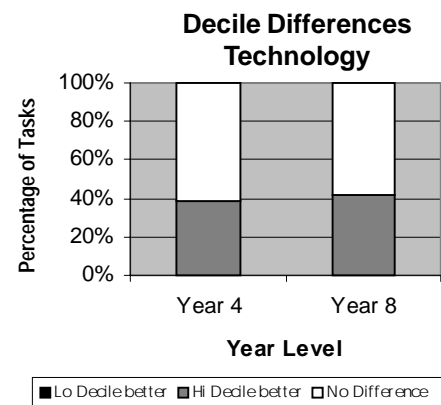
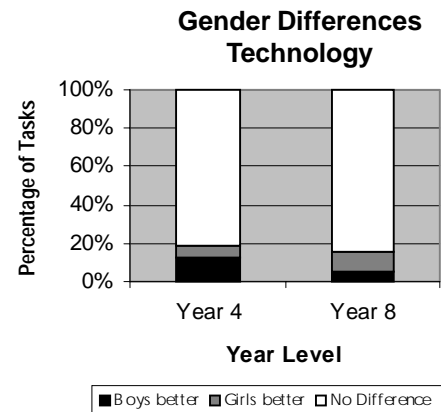
Overall, boys and girls in Years 4 and 8 did equally well on technology tasks in NEMP (Crooks and Flockton, 1997b) but tradition still prevailed — for example, boys did better on tasks involving an electrical circuit and another involving an understanding of how a technological device works, while girls did better on tasks involving creating a design for a sports bag and for a container for gift soap. There were no significant gender differences reported in performance on computing tasks (Crooks and Flockton, 1997).

Social class and ethnicity: a digital divide?

NEMP findings show that students from low decile schools have the lowest performance and those from high decile schools have the highest performance, on 40 percent of tasks involving technology. Furthermore, children in decile 1-3 schools fall further behind as they get older.

Also, Maori and Pacific students performed less well than other students on technology tasks in NEMP. Non-Maori students did better than Maori on 13 percent to 15 percent of the technology tasks in NEMP, with the gap increasing slightly by Year 8 level (Crooks and Flockton, 1997b). Students from schools with higher proportions of Pacific students performed significantly less well, especially at Year 8 level, than did students from schools in which Pacific students were less than five percent of the population (Crooks and Flockton, 1997).

QUOTE FROM THE REVIEW *Gender differences must become part of the equity discussion surrounding technology now, before computers have become integral to teaching and schools. Do plans for integrating technology into the public schools take into account the needs and experiences of specific groups of students? Are all students envisioned as creative "power users", or are students informally tracked into different relationships with technology based on sex, class, or other social characteristics? How might technology products advance better — and more equitable — forms of learning and instruction generally? (American Association of University Women, 1999, p.127)*



Health and Physical Education

See the review: pages 215 to 228.

Boys dominate physical education at senior levels. Ethnic and social class differences in performance are smaller than in other subjects.

Physical education

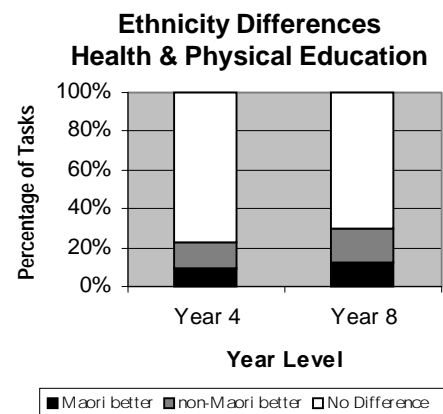
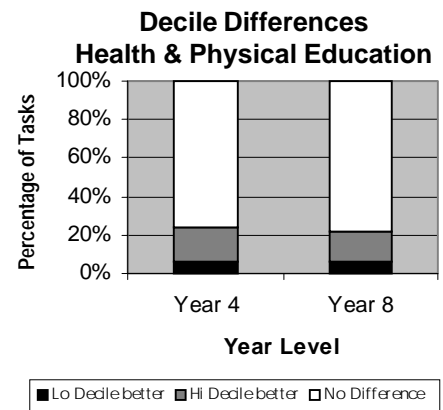
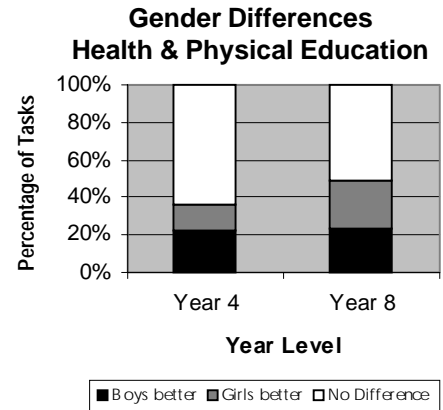
Analysis of NEMP physical education tasks showed gender differences favouring both boys and girls at Year 4 and Year 8. Maori children outperformed non-Maori children on a range of tasks at both year levels, and children from low decile schools outperformed those from higher decile schools at Year 4.

Health tasks

Analysis of health tasks revealed that girls at Year 8 performed better than boys on five tasks, and were also more positive about health education. Maori children and children from low decile schools scored lower on some health tasks than non-Maori children and children from higher decile schools, but they had more positive attitudes about health education.

Boys choose Physical Education

Praat (1999) found that physical education was a ‘top ten’ choice of male students, but not of female students, for examination for Sixth Form Certificate from 1992, and for Bursary from 1995. (The only exception was Sixth Form Certificate in 1997.) From 1992 to 1997, male students were between three to five percent more likely to offer themselves for physical education in Sixth Form Certificate, and were around four percent more likely to offer themselves for physical education for Bursary from 1995. Participation in physical education at post-compulsory levels is below 20 percent for both genders.



Social Studies

See the review: pages 229 to 260 for a broader discussion of research on gendered patterns in the Social Sciences.

Boys do better than girls, in a subject that stratifies students by ethnicity and social class.

Primary and Intermediate Levels

Boys do significantly better in social studies tasks than girls at primary level, according to NEMP findings. At Year 4, the only statistically significant gender differences in social studies achievement found in the NEMP assessments showed boys on average scoring more highly than girls on two tasks involving maps (Flockton and Crooks, 1998). However, at Year 8, boys outperformed girls on six of 19 tasks, while girls were better on three tasks.

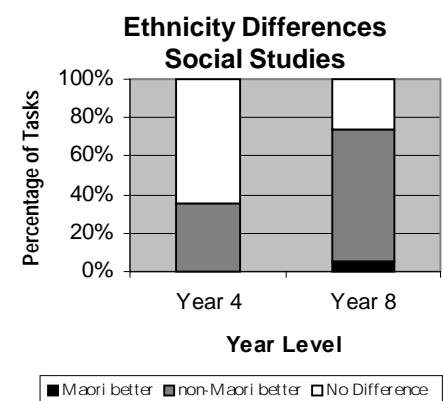
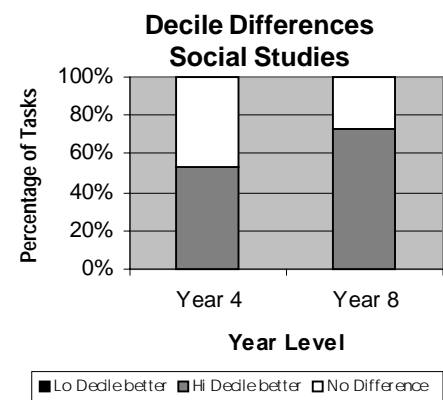
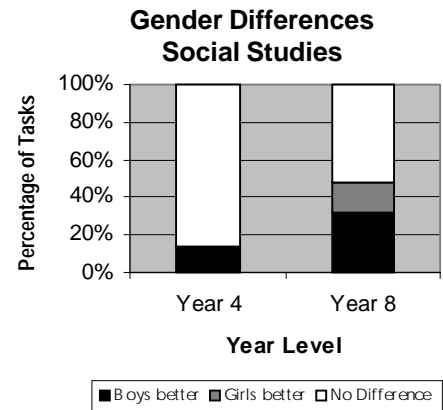
Social class and ethnicity

Like gender differences, differences in achievement by social class and ethnicity grow as primary schooling progresses. Students from low decile schools do significantly more poorly on more than half of the NEMP tasks at Year 4 and more poorly on almost three-quarters of assessment tasks by Year 8. The gap between Maori and non-Maori students' achievement in social studies also widens markedly. (The absence of data for Pacific students does not allow clear conclusions to be drawn about their performance.)

Maori students did significantly better than non-Maori on a NEMP task using a marae context, showing that cultural relevance is linked to differences in achievement. By Year 8, Maori students no longer had the positive attitude towards social studies evident at Year 4. In contrast, students from schools with higher proportions of Pacific students still retained their positive attitude.

In short, it appears that social studies might actively stratify student achievement. This is a major concern in a curriculum area in which students from diverse backgrounds might be expected to achieve well. These results raise questions about the extent to which the subject meets its aims of enabling students to value cultural diversity and to participate in a changing society as informed, confident and responsible citizens.

Maori students did significantly better than non-Maori on a NEMP task using a marae context, indicating that the curriculum is linked to differences in achievement.



Gender and health

See the review: pages 215 to 228 and 261-292.

While over 90 percent of young men and women self-assess their health as being good or excellent (Statistics New Zealand, 1998), the review reveals a number of gender differences in health and well being. For instance, boys in childhood and adolescence are slightly more likely than girls to be physically active, and young Maori are more likely to be physically active than young non-Maori people (Hillary Commission, 1999; Statistics New Zealand, 1998; Ministry of Health, 1999). Many of the gender differences identified by the review, such as those related to alcohol consumption, seem certain to be related to gender differences in learning. It was noted that:

- Adolescent boys are more likely than girls to report drinking alcohol in large quantities and with great frequency (Ministry of Health, 1999; Statistics New Zealand, 1998).
- Adolescent females are slightly more likely than adolescent males to smoke, and young Maori (particularly females) report higher rates of smoking than do non-Maori (Statistics New Zealand, 1998).
- Boys up to the age of 15 are more likely than girls to report some form of disability (Statistics New Zealand, 1998).
- Boys are more likely than girls to have learning or behaviour problems in middle childhood. In adolescence, young women have higher rates of depression and anxiety disorders (Ferguson, Horwood and Lynskey, 1997). Boys are much more likely to receive Special Education Assistance for serious disabilities, or learning and behaviour problems, than girls (Moore et al, 1998).

Adolescent boys and young men are more likely to complete suicide than their female counterparts.

Girls and young women are more likely to attempt suicide (according to hospital records).

Young Maori males and females are more likely to complete suicide than their non-Maori counterparts.

- Except when pregnant or giving birth, young women (15–19 years) are most likely to be hospitalised as a result of external injury or poisoning — and these are also the main causes of hospitalisation among young men.
- Young Maori have higher rates of hospitalisation than non-Maori, but both groups have similar reasons for being in hospital. (Statistics New Zealand, 1998).

Behaviour: the crisis of boys?

See the review: pages 261 to 292.

Bullying, violence, and verbal and emotional abuse

International and local studies (Whitney and Smith, 1993) suggest that bullying and violence are problems for many New Zealand primary school students, especially as they get older (Martin 1996, 1997; Walker, 1998; Maxwell and Carroll-Lind, 1996). For example, in the Third International Mathematics and Science Study:

- Over a third of students in Standard 2 and 3, and in Form 2 and 3, indicated that they thought, in the previous month, that another student might hurt them.
- Over half of students in Standard 2 and 3, and in Form 2 and 3, indicated that some of their friends were hurt by other students in the month prior to being tested.

This pattern, at primary school level, was similar across ethnic groups and there were no significant gender differences (Martin, 1997). The findings from this study showed that New Zealand students reported high rates of bullying compared with those reported by students from other countries.

Martin (1996) reports that bullying was more prevalent among boys than girls at age 13. Asian males were the most likely to report that they experienced threatening behaviour (18%) and Pacific girls were the least likely (1%). All other groups were at 5-6 percent (Walker, 1998).

Maxwell and Carroll-Lind (1996) surveyed 259 intermediate age children from nine schools (a non-representative sample). Some key findings were:

- 63 percent of girls and 79 percent of boys reported that, at some point in their lives, they had been punched, kicked, beaten or hit by other children.
- Boys were three times more likely than girls to report that they had been in a physical fight with children in the last nine months (36% and 12% respectively).
- Similar proportions of boys and girls reported having tales told about them, experiencing catty gossip, or being 'narked on' (62% of girls, 57% of boys). More girls than boys reported they had been threatened, frightened or called names in the last nine months (70% of girls, 65% of boys). Girls are subject to more frequent exclusionary practices: 52 per cent of girls report being ganged up on, left out, or not spoken to, compared to 29 per cent of boys.

Abuse of teachers

Personal experience of some form of abusive, aggressive or threatening behaviour in the past 12 months, mostly by boys, was reported by 69 percent of the 327 teachers who responded to a PPTA survey on student behaviour issues (PPTA, 1997).

A number of researchers suggest that while boys are more likely to be in a physical fight, girls are more likely to experience exclusion. (Martin, 1996, 1997; Walker, 1998; Maxwell and Carroll-Lind, 1996)

Suspensions: mostly boys

Most pupils (98%) do not feature in suspension statistics. However, of those who are suspended, three-quarters are male, according to data for the year beginning July 1996. (Sturrock, 1998) The vast majority of students were suspended at age 13, 14 and 15 years. The suspension rate per 1000 students for Maori (35.8 per 1000) was more than three times that of the Pakeha rate (10.9 per 1000). The Pacific students' rate was 19.3 per 1000.

The main reasons for suspensions were physical assault on another student (21%), continual disobedience (21%), incidents involving drugs (15%), and verbal assaults on staff (11%). Theft and alcohol each accounted for about another seven percent of suspensions. Pakeha/European students were slightly more likely to be suspended for disobedience, Maori students for drug-related incidents, and Pacific students for physical assaults on other students (Sturrock, 1998).

Truancy

Currently, there are no national statistics of truancy by gender. However, a longitudinal study in Christchurch found no gender differences in truancy rates (Fergusson, Lynskey and Horwood, 1996).

Boys, girls, schools and the curriculum

Our review summarises extensive evidence showing not only that pupils are often trapped in narrow gender stereotypes and see some subject areas as appropriate for either boys or girls, but also that the curriculum itself (both prescribed and enacted) can reinforce gendered assumptions and behaviours. We will now introduce some strands of that research. We ask readers to bear in mind that these and other 'snapshots' from our review do not attempt to summarise the gender-related research in each curriculum area. For that purpose, readers should consult the curriculum chapters in the review.

Being staunch in New Zealand: rugby, surfies and metallers

Pakeha boys in New Zealand secondary schools see being 'staunch' as the desirable masculine ideal, according to Rout (1992) whose study echoes many overseas studies cited in our review. In the two schools studied by Rout, being 'staunch' was enforced by verbal and physical 'hassling' by some members of the first XV (in the single-sex school), and by 'surfies' and 'metallers' (in the co-educational school). Rout wrote that:

For these three groups, being 'staunch' meant being in control, being tough, being able to 'handle' anything — and winning. It was their way of gaining respect and popularity from others (male and female) and respect for themselves. (p.171)

Rout found that a large majority of the other boys also related to each other in 'staunch' ways. Verbal and physical 'hassling' was "... the means by which violence was justified as 'normal' male behaviour because it was accepted and even expected by both the perpetrators and the victims." (p.173)

Like other researchers (Mac an Ghaill, 1994; Eder *et al.* 1995), Rout found that proving masculinity also meant denigrating and harassing girls and women. He wrote:

"You're throwing like a girl" or "What are yah — queer?" are, for males, two very powerful and common insults that attack the core of their masculine and personal being. In other words, by thinking of themselves as superior to girls, the boys could not only put girls down but at the same time boost their own personal and public status as males. Hassling girls was always of a sexual nature, and girls, simply because of their sex, were always the victims. (p.174)

Bird (1992) reported her interpretations of primary school boys' disruptive behaviour during a writing activity. She likened the gender constraints to a:

...barbed wire fence between the genders... To take an interest in girls' things is to risk positioning oneself as a girl, which in western culture is synonymous with being a gay male, frequently a reviled social position. (p. 167)

The damage caused by homophobia

Some researchers argue that serious damage is caused when 'other' sexualities are visible in schools only as targets for denigration. The result, argues Friend (1998), is that homosexuality is seen only as sexual behaviour, and is pathologised by being associated with sexual deviance, paedophilia and HIV/AIDS. Town (1998, 1999) found that all of the gay students in his study experienced and/or witnessed verbal abuse, often including threats of physical violence. Such homophobia, according to Town, causes depression, low self-esteem and the risk of suicide.

A number of researchers see, in such problems, a 'hegemonic masculinity' that is 'policed' by the tendency, in schools, to denigrate femininity and to silence sexualities other than heterosexuality (Epstein, 1996; Eder *et al.* 1995; Jordon, 1995; Larkin, 1994; Stein, 1995). A related idea is that of 'hetero-normativity', a term used to label values such as that of the 'superheroes' and 'beauty queens' said to 'rule' in some US schools (Jordon, 1995). Another common term is 'hetero-sexism', which Friend defines as "the assumption that everyone is heterosexual, or if not, should be." (1998, p.139)

How schools can reinforce gendered assumptions about identity

The need for New Zealand research into this issue was highlighted by a classic study of gender identity in a UK secondary school by Mac an Ghaill (1994). The study identified four peer groups of boys, each with a ruling ethic:

1. The working class *Macho Lads*, who experienced school as a system of hostile authoritarianism and meaningless demands. Their experience was shaped by their low social status, and by social relations characterised by domination, alienation and infantilism. Their influence was pivotal in establishing a school culture pervaded by the assumption that ‘academic’ is feminine and ‘non-academic’ is masculine. The teachers’ main function, vis a vis the Macho Lads, was to police them.
2. In contrast, the *Academic Achievers* were a working class group that developed an “institutionally confident student masculinity that was highly valued by the teachers.” (p.60) Other students and some male teachers saw them as effeminate (because of their interest in the arts). Interestingly, the Academic Achievers followed traditional gender stereotypes within subjects — in English, for example, they aimed to become ‘experts’ whereas girls were interested in feminine writers and ‘emotional stuff’.
3. The working class *New Entrepreneurs* valued the school subjects of business, commerce and technology because these held the promise of social mobility. They co-operated with teachers in exchange for help in acquiring qualifications. Mac an Ghaill saw their masculinity as being, in part, a response to a changing educational policy climate in which schools competed in an education market, in which funding arrangements were changing — for example, businesses were sponsoring the technology department.
4. The middle-class *Real Englishmen* positioned themselves as the younger generation of a cultural elite. They expected to negotiate with teachers, valued ‘effortless achievement’, disdained hard workers as ‘sloggers’, and assumed that intellectual talent was naturally inscribed within their peer group.

All four masculinities featured ‘compulsory heterosexuality, misogyny and homophobia’, according to Mac an Ghaill (p.90). Sex-talk included boasting about performance, objectifying females, and denigrating gays and the feminine; these were ways in which males publicly proved their masculinity to their peer groups. However, boys privately reflected on the difficulty of talking about feelings with each other, and on their resulting loneliness. Their treatment of girls was ambivalent: they wanted girls, felt inadequate to have relationships with them, put their mates first, and expected girls to ‘know the score’. There was sexual harassment of girls (other than girlfriends). Mac an Ghaill argued that:

“...dominant definitions of masculinity are affirmed within schools, where ideologies, discourses, representations and material practices systematically privilege boys and men.” (p.4)

Mac an Ghaill saw all four masculinities as the product of many factors, including school practices, peer group practices, social class, family networks, changing labour markets, and local and state regulation.

How dominant masculinities affect girls

The dominant versions of masculinity also policed the positions of female students, according to Mac an Ghaill. For example, terms such as ‘slag’ forced girls to conform to heterosexual stereotypes. Some teachers believed that girls were not interested in computing and technology, and they encouraged working-class girls into ‘care-oriented’ courses. Girls challenged these assumptions, and spoke of exclusionary practices (‘the boys took over’) as reasons for their participation patterns. They also criticised the way some teachers motivated boys in the higher social sets by comparing their performances in maths and science unfavourably to that of girls, while disciplining the behaviour of boys in lower social sets by accusing them of having feminine characteristics. Girls’ complaints of harassment were not taken seriously by teachers who worked on ‘the boys were having a laugh’ principle, a problem also found by other researchers (Stein, 1996; Larkin, 1994; Gilbert and Gilbert, 1998). Mac an Ghaill also criticised the way sexism, racism and homophobia were ignored when dealing with bullying, citing research indicating that bullying can cause suicide.

Is literacy for ‘girls’?

Girls’ more positive attitudes to literacy have been reported in New Zealand and US research (Fitzgibbons, 1997; Pajares and Valiante, 1996; Tanner and Decotis, 1995) and are also found in the learning of a second language (Zammit, 1993).

One reason why boys have lower scores than girls on literacy tests could be that boys resist reading for fear of being branded as 'girls' or 'queers'. Such labelling is widely seen as a way that some boys police their rejection of a subject they see as effeminate (Martino (1997). For example, Sanderson reports Australian boys describing a 'wuss' as a boy who 'reads all the time, everywhere'. Synonyms for 'wuss' included:

... a loser, a dweeb, an idiot, a dork, a dick, a moron, posh, pussie, a douche, a girl, a girl lover, a wimp, a wanker, queer, gay, happy, gay farts, weird, a donkey brain and twinkle toes. (p.9)

A study by Coote (1998) found a similar pattern in boys' attitudes in a New Zealand school.

Boys constitute two-thirds of the six-year-olds who participate in Reading Recovery programmes, and it has been suggested that their self-esteem might be damaged by being positioned as failures at such a young age. Girls' higher involvement in reading has been found to be associated with their higher achievement in School Certificate English, across all ethnic groups (Bardsley, 1991).

Gender and ethnic differences in reading

Major gender differences in reading habits, attitudes and interests were found in a New Zealand study of 2202 fourth and sixth formers (Bardsley, 1991). At both levels, girls were more likely to read, to enjoy reading, to buy books, and to belong to a public library. Middle class and professional parents most often discussed books with their children. Pacific Islands parents were less likely to discuss reading with their children than any other ethnic group, and Maori and Pacific boys were particularly dependent on school for their reading. Fathers were much less likely than mothers to discuss reading with their children, across all ethnic groups. Boys prefer to read about science fiction, war, adventure, sport, the outdoors, cars and trucks, while romance remains popular with females.

Information technology: How level is the playing field?

There is strong evidence that students are disadvantaged in computer studies if they are female, from Maori or Pacific communities, or attend low decile schools. These students have less access to computers both at home and school. Boys reported greater access to computers at home and at school at the Year 4 level and greater computer usage out of school at the Year 8 level, according to NEMP findings. This data reflects Frith's (1994) study of home computer access of Standard 3 and 4 students (Years 5 and 6) in a large New Zealand city primary school. Frith found that 70 percent of boys had computer access at home while fewer than half (49%) of girls had home access to a computer. Only 47 percent of the Standard 2 and Standard 3 Maori students participating in the TIMSS study had a computer at home, compared to 57 percent of Pakeha students and 63 percent of Asian students. (Garden, 1997). Pacific students in Standard 2 and Standard 3 were the group least likely to have access to a computer at home of any ethnic group in the TIMSS study, with just over a third of these students reporting home access (Garden, 1997).

In addition, international research indicates that: "... more able students have significantly more access than less able students; ... and students from affluent backgrounds have significantly more access than students from less affluent backgrounds" (McKinnon, Nolan and Soler, 1989). Local research also indicates that parents tend to provide more computer access for their sons than for their daughters. The problems faced by girls are widespread, according to researchers such as Brunner and Bennett (1997) whose account of a series of New York studies includes this statement:

We found, to nobody's surprise, that girls are more ambivalent about technology than boys, who are more positive; that boys are more excited about their experiences with technology, particularly video games, while girls like video (i.e. stories) and tend to get bored when they encounter bad technology experiences. Girls are also less likely than boys to attempt to fix a broken piece of technology, and all the youngsters in this study talked about a male when asked about a "technology nut" they know. (p.47)

This pattern was evident in a class of five-year-olds, and is highly resistant to teacher intervention, according to New Zealand research by Ostermann (1998). There is also much evidence that boys spend a lot more time engaged in computer games than do girls, and that boys are bored and unchallenged by educational software (McKinnon *et al*, 1989).

Are the arts ‘for girls’?

Gender research in arts education consistently reports that the arts in schools are seen as ‘for girls’. Norris (1999) found that this assumption can apply at pre-school level, and there is considerable evidence that boys are hassled for being active in the arts in secondary schools. For example, Mac an Ghaill (1994) reports a boy who said:

“We were in the school band and they would really take the piss, saying we were girls because we carried round violins and that. And then we got into drama, the macho mob were very bad, every day threatening and punishing us. (p.60)

Even teachers’ attitudes to boys’ participation in the arts can reflect homophobia. For example, Stephens (1996) reports that a New Zealand drama teacher tried to persuade boys to take drama as a sixth form subject by denying that:

“... there’s something strange about us. But believe me that’s not the case. I’m about as fond of rugby as I am of anything. And we’re not just poofers. ... [You are not interested] because you’ve decided drama is for queers and weirdos.” (p.176)

QUOTE FROM THE REVIEW Over the past decade there has been relatively little research in arts education and gender. However, recent developments in the arts, and feminist and poststructural theory, have led to a new and emerging body of literature exploring the inscribing of culture and gender through arts.

Is mathematics still ‘for boys’?

The research evidence suggests that boys’ and girls’ experience of mathematics is still influenced by the idea — disproven by achievement statistics — that males do better at mathematics than females. However, the literature shows fairly consistently that males see mathematics as a male domain rather more than do than females (Tartre and Fennema, 1995; Frost *et al.* 1994; Forgasz and Leder, 1996a, b; Leder and Forgasz, 1997). This has led some researchers to speculate that it may be the *behaviour* of males that deters females from full participation in mathematics (Frost *et al.* 1994).

There is contradictory international and local evidence concerning girls’ confidence in mathematics (Young-Loveridge, 1992; Bohlin, 1994; Junge and Dretzke, 1995; Randhawa *et al.* 1993; O’Brien *et al.* 1999; Frost *et al.* 1994; Tartre and Fennema, 1995). It is also difficult to establish causal links between self-efficacy beliefs and achievement.

A number of researchers report that gender differences vary by (presumed) ability level. For example, Young-Loveridge (1992) writes that at nine years of age or even earlier:

“... some low-achieving girls feel such as sense of hopelessness about mathematics and their ability to master it, that they will probably only rise above those feelings of despair when something specific is done to help them.” (p.134)

Is the curriculum gendered?

Elements of the curriculum itself are biased towards ‘the masculine’, according to local and international literature. For example, New Zealand researcher Nairn (1995) claimed that ‘male-focused lessons predominate in the current secondary geography curriculum’ (p.28), citing, as an example, the focus on men’s activities in farming and mining. Most curriculum chapters in the review refer to researchers who see a need not only to remove sexism from school texts and practices but also to re-think the actual content of the subject disciplines.

QUOTE FROM THE REVIEW The construction of the active, physically tough and competitive masculinity for young men, implicit in the research on physical education (Wright, 1996; Scraton, 1987; Kirk, 1995) has been linked to the higher rates of violence leading to death or injury (e.g. suicide, homicide, motor vehicle accidents) amongst young men (White, 1997) and to sexual harassment and violence against women (Jackson, 1993).

Physical education

Physical education is seen, locally and internationally, as something of a bastion of gender bias. The literature frequently refers to ways in which schools perpetuate restrictive notions about the physical and sporting activities thought to be suitable for girls and boys. For example, Scraton (1987) found that physical education

teachers in Britain perpetuated constructions of men as active, powerful and strong, and women as 'bodily firm' but weak, inactive, and concerned with their appearance. Other common problems noted include failing to challenge sexist and homophobic language, and reinforcing aggression and competition at the expense of co-operation and improving skill.

Wright (1996) found Year 7-10 girls were seen as lacking in skills, toughness, courage, the ability to withstand pain, and the desire to 'have a go' — even though, in fact, around half of the girls interviewed were involved in aerobics, weights and hydrogym classes. This false view might be related to the fact that some teachers and male students saw traditional team sports and competitive endurance activities as the sports that 'counted' whereas dance and gymnastics were 'social' activities. The local and international literature frequently refers to the greater status accorded to male sport in schools (Bradbury, 1990; Creighton, 1992; Eder, Evans and Parker, 1995; Gilbert and Gilbert, 1998; Williams, 1990) but Wright (1996) also reported that some girls valued their activities, resisted masculinist definitions of female inferiority, and drew attention to boys' lack of ability in these areas.

Females, sport and body image

Wright (1996) found that girls' took part in physical activity because they wanted to have a slender, tight body, which was thought to signify will power and a lack of laziness. Furthermore, they took the toned, slim bodies of their male friends as their standard — whereas the male students neither aspired to look like females, nor linked physical activity to physical attractiveness. Bradbury (1990) cites peer pressure to conform to 'feminine ideals' that contradict being actively sporty as influencing girls' decisions not to participate in physical education.

Boys, girls and classroom interactions

Kelly's (1988) analysis of 81 international studies of classroom interaction showed that girls participated in 44 percent of public classroom interactions across curriculum areas, regardless of whether the interactions were initiated by pupils or teachers. Girls received fewer response opportunities, fewer questions, and fewer teacher questions demanding a higher level of reasoning. Boys received 68 percent of behavioural criticism from teachers. Some New Zealand studies (on a much smaller scale) found even higher rates of boys' dominance of classroom interactions (for example, Newton, 1992) and that teachers are often astonished to discover the extent of gendered processes in their classrooms (Alton-Lee, Nuthall and Patrick, 1993; Newton, 1992; Tobin and Garnett, 1987).

Some boys are quiet

A number of researchers have found that some boys do not dominate classroom interactions. For example, findings by Nairn (1991) 'challenge the myth that all male students are naturally noisy and therefore naturally dominate the public verbal space of classrooms.' (p.27) She studied teacher-student interactions in 37 classes in secondary school geography in 14 co-educational secondary schools in and near Christchurch, and found that student-teacher interactions were relatively gender-equitable in 30 percent of the classes, that girls dominated interactions in 13 percent of the classes, and that boys dominated in 57 percent. While 47 percent of the girls were silent in at least one lesson, 33 percent of the boys also never participated.

Do single sex schools and classrooms help?

The weight of evidence suggests that the achievement of boys and girls is not significantly affected by whether they attend single-sex or co-educational schools. The greater success of both girls and boys in single-sex schools in New Zealand appears to be due to the tendency of these schools to attract students from higher social classes. (Wagemaker, 1993; Nash and Harker, 1997; Sturrock, 1993; Education Review Office, 1999). However, Australian and British research shows that co-educational science classrooms have interaction patterns that favour boys, and expose girls to an unsupportive classroom atmosphere in which they encounter sexual harassment and denigration by boys (Gardner, 1985; Kelly, 1982; Pummeroy and Haynes, 1986; Rundle, 1985; Spender, 1982, and Wilson and John, 1985, cited in Scott, 1992). Byrne (1993) argued that boys' classroom behaviour 'is a reason for improved classroom management to control boys' discourse, not a reason for segregating girls.' (p.10)

Does teacher gender make a difference?

It is sometimes said that the poorer achievement of boys occurs because primary school boys have few male teachers (Wilkinson, 1997). Although there are important educational and social reasons for students having access to male teachers (Farquhar, 1997), research does not support the view that boys' achievement will be higher when taught by male teachers (Elley, 1992; Brookhart and Loadman, 1996). Elley's (1992) analysis revealed that schools had *higher* proportions of female teachers in the ten countries that had the highest literacy achievement. Also, it does not make sense to suggest that women teachers cause boys' poorer performance on literacy tests when the same teachers teach boys who outperform girls in social studies.

FROM THE REVIEW *It does not make sense to suggest that women teachers cause boys' poorer performance on literacy tests when the same teachers teach boys who outperform girls in social studies. (See p.172 of the review.)*

It has also been suggested that boys' low achievement is caused by the 'feminisation of teaching'. This allegedly disadvantages boys through a lack of academic role models, a feminist bias in curricula, soft discipline, a lack of competition, and regimes that favour females. Delamont (1999) argues that these propositions are undermined by extensive evidence that harsh discipline can prompt 'macho' anti-school behaviour, that men and women have diverse approaches to pedagogy, that boys receive more teacher attention than girls, and that women teachers tend to value the achievement of boys more than girls. Also, there is no evidence that men are better than women at civilising and motivating the 'macho' lad (Mac an Ghail, 1994).

FROM THE REVIEW *In an analysis of 900 Texas school districts...Ronald Ferguson found that teachers' expertise — as measured by scores on a licensing examination, master's degrees, and experience — accounted for about 40 percent of the measured variance in students' reading and mathematics achievement gains at grades one through eleven — more than any other single factor. He also found that every additional dollar spent on more highly qualified teachers netted greater increases in student achievement than did other use of school resources. (Darling-Hammond, 1998, pp.6-7)*

Strategies for change

These 'snapshots' from the review are taken from various curriculum and other chapters. See particularly chapter 11.

Recent theorising tends to assume that gendered patterns are produced by a mix of factors including the curriculum, pedagogy, school practices, cultural assumptions and social practices. (This contrasts with the 'deficit' explanations, reportedly common among teachers, that see poor achievement and other problems as caused by factors 'within girls' or 'within boys'.) Accordingly, strategies need to respond to the needs of students in particular contexts, and to be integrated into ongoing school programmes and practices.

What is best for your school?

The review makes it clear that an effective school policy for addressing gender issues needs to be a response to local needs. Thus, the ideas for change in this chapter should be seen only as points to consider.

For suggestions for using the review as a tool for professional development in your school, see page 37 of this document.

Making schools safe

This section introduces some strategies that have been recommended for reducing bullying and sexual harassment. The ideas are grouped under headings that indicate their main focus, but readers should note that the strategies are often more broad-based than our subheadings indicate.

Making pupils responsible for their own behaviour

It might not be enough for schools to respond to bullying and sexual harassment only by punishing pupils who break rules (Stein, 1995). Such 'top-down' regimes can be opposed by the aggressive masculinity of some boys, thus reinforcing the very behaviour that the school is trying to eliminate (Connell, 1993). In addition, heavy-handed disciplinary strategies might model, and therefore promote, the hegemonic masculinity used by bullies (Kenway and Fitzclarence 1997; Epstein *et al.* 1998; Gilbert and Gilbert, 1998; Browne, 1995b). Also, top-down policies do not challenge pupils to consider the implications of their behaviour, or to examine its causes in the sexism, homophobia, hegemonic masculinity and racism of themselves and the wider society (Gilbert and Gilbert, 1998; Mac an Ghail, 1994).

Carosi and Tindale (1995) report a successful example of an alternative strategy, known as the Glasser system, at Canterbury Boys High School in Sydney. The system is based on four key components: teachers evaluating how their behaviour may have contributed to student misbehaviour; positive reinforcement of good behaviour; negotiation to settle problems; and students taking personal responsibility for their behaviour. Students must have choices in how they act, and must understand the positive and negative consequences of their behaviour. Extensive teacher and pupil education about the system is required. The results include positive survey evaluations and school assessments, and reduced teacher absenteeism. The Canter system is similar, and has been implemented at Whangarei Boys High School (Lints, 1999).

Skills for students

Another approach to reducing bullying and sexual harassment seeks to teach skills such as effective communication, collaboration, active listening, conflict resolution, and assertiveness (Eder *et al.* 1995; Combes, 1995; Freeman, 1996; Griffiths, 1995; Browne, 1995a, b; Shores, 1995; Clarke 1995). Critics of this approach cite evidence that sex-based harassment and bullying is caused, not by poor social skills, but by the attractions of exerting power and gaining status. (Hinson, 1995, cited in Gilbert and Gilbert, 1998; Connell 1993; Eder *et al.* 1995). However, such skills training can be combined with attention to wider gender issues (Combes, 1995).

Knowledge-based strategies

Knowledge-based approaches include simply 'recognising' and 'naming' bullying and harassment, and declaring it to be unacceptable (Stein, 1995; Briggs and Hawkins, 1996). Other knowledge-based strategies include teaching boys about the way that sex-role stereotypes are thought to contribute to violence and other educational, social and health problems (Browne, 1995a, b, c; Shores, 1995; Kokori, 1995). Classroom initiatives have been reported in drama (Kokori, 1995), history (Littlewood, 1995), and health

(Shores, 1995). However, these approaches have been criticised by teacher-educators working within post-structural frameworks. For example, Davies and Banks (1992) argue that school children have already taken up the dominant assumptions about gender, and will therefore use them to filter new information. Consequently, they need to understand *how and why* they have taken up these understandings, and how they can explore alternatives.

Self-esteem and personal development

Other approaches to making school safe (and also to other gender issues) emphasise pupils' self-awareness, self-concept and self-esteem. However, the (Australian) Gender Equity Taskforce (1997) warns that:

'There are a number of programmes [whose approach] celebrates masculinity and ... helps boys discover the 'warrior within'. Such programmes are likely to increase dualistic thinking which denigrates femaleness. This will only escalate violence.' (p.46)

However, the Taskforce (echoing a theme commonly found in the research) states that:

'At the same time it is important that boys' programs still allow boys to feel good about themselves and not adopt a negative blaming tone, as this will also be counter productive.' (Gender Equity Taskforce, 1997, p.46)

Personal development approaches for girls have often aimed to raise their self-esteem and self-confidence (Combes, 1995; Shatford, 1995; Hannan, 1995; Sadker and Sadker, 1993). These approaches can be combined with knowledge-based approaches that help girls to critically examine their positions in society, and to choose alternative positions (Combes, 1995).

QUOTE FROM THE REVIEW Graham (1999) found positive and significant change in the self-esteem of boys and girls and positive changes in boy-girl relations linked to a social partner dancing programme for 83 secondary students in the Auckland metropolitan area.

Narrative therapy

Kenway and Fitzclarence (1997) suggest that violence can be reduced through narrative therapy, as described by White and Epston (1990). This therapy assumes that people construct, for themselves, dominant stories that explain and shape their lives. For example, a person can come to believe that the story of their life is that of a violent person, or of a victim of violence. However, if they can identify critical moments when they were not violent (or refused to be a victim) then those moments can be used to create an alternative story, thus building an alternative identity. It is claimed that narrative approaches have the advantage that story-telling is a familiar and flexible way of meaning-making in schools, and one that allows personal experience to be seen in the context of the prevailing 'stories' of the wider culture.

Whole-school policies for making schools safe

Whole-school policies tend to emphasise:

- *Investigating the extent and nature of gendered violence and harassment*
- *Showing students how gendered assumptions can limit their social, health and educational opportunities.*
- *Teaching skills such as conflict resolution, communication and mediation*
- *Professional development for teachers*
- *Examining disciplinary strategies, and policies for achieving gender equity in all curricular and extra-curricular activities*
- *Developing policies to overcome discrimination and violence.*

Our review also shows that more New Zealand classroom-based research is needed to inform our practice.

Comprehensive strategies

Broad guidelines for anti-violence education have been suggested by a number of researchers. For example, Kenway *et al.* (1997) believe that approaches will be more effective if they teach rather than preach. The pedagogy, they believe, must not destabilise gender identities, but recognise the emotional labour of teenagers who are building their identities. In other words, the approach should deconstruct and reconstruct identities, not destroy them. Effective approaches guide students to find their own truths and to plan their own actions, and therefore a 'pedagogy of the emotions' is needed that helps young people "develop emotional intelligence to understand the implications of their emotions for the ways they behave." (p.127)

Mac an Ghaill (1994) believes that education about sex and sexuality should address the gendered power relations implicit in school policies, practices and ideologies. He recommends a student-centred pedagogy

focusing on adolescent sexuality development, on understanding power relations between and within social groups, and on emotions and emotional development.

Eder *et al.* (1995) believe that schools should support sports and other activities that maintain competition without promoting ruthless aggression, and that allow girls to be valued in ways other than for their looks. They argue that girls and boys need to discuss how their lives are affected by sexism and by limited views of femininity and masculinity. They should also be helped to deal with sexist attacks by strategies such as humour. Staff should take complaints of sexual harassment seriously, and should provide boys with models of sexual relationship that do not involve competition and conquest. And, finally, they recommend that schools should help boys and girls to relate as equals, through co-operative learning activities, and non-athletic pursuits, including clubs.

Teaching strategies for students who dominate discussion

Gilbert and McComish (1990) suggest that both boys and girls need training in group techniques so that oral and written language activities can produce learning experiences ‘which are good for all students, but particularly for the girls’. (p.55)

Turn-taking is a key element in group discussion. Nairn (1995) reported on a project to train students in turn-taking, in fifth and seventh form geography classes. The strategy was designed to provide ‘minimal risk’ opportunities for quiet students (female and male) to participate publicly. Students were given opportunities to think of ideas and rehearse these with their neighbours, before speaking publicly without interruption from other pupils. Students could also decline to speak. Two-thirds of the quiet female students said that they participated more during these lessons, liked the content better, and found the topic more interesting and more relevant to their own experiences. The quiet male students were also positive, but saw benefits for other students rather than themselves.

Sadker and Sadker (1993) report that girls are more likely to participate publicly when teachers increase their wait-time between asking questions and accepting answers. They found that teachers are less likely to ignore quiet students if they spend more time walking around the classroom. They suggest using co-operative groups to build student confidence (providing that individual accountability is also emphasised). They also recommend that teachers reward appropriate gender-fair behaviour, rather than only attending to — and thus inadvertently rewarding — boys’ poor behaviour.

Better subject teaching practices

Our review of the literature showed that equitable teaching practice requires good teaching, derived from the best research-based understandings of effective teaching and learning. For example, Nuthall (1999) argues that effective learning requires goals and tasks that are transparent and diverse, that relate to students’ interests, motivations and cultural backgrounds, that ‘mirror’ unconscious knowledge acquisition processes, that increase levels of trust and mutual support between students, that disrupt hierarchies developing between students, and that enable student knowledges and skills to be valued.

Biddulph and Osborne (1984) echoed a common theme when they recommended that science teaching encourage students to be scientists. They recommended an ‘interactive teaching approach’ in which teachers identify children’s understandings and questions, encourage children to seek answers to their own questions, and guide children’s investigation reflection, reporting and shared evaluation. Australian teachers have reported that, with interactive teaching, ‘girls were just as successful, inventive and eager to participate as the boys...’ (Biddulph, 1989, p.235).

What about ‘learning styles’?

It is sometimes claimed that boys and girls (and certain ethnic groups) have essentially different ‘learning styles’, and that teaching should allow these styles to

FROM THE REVIEW Waiti McPherson (1991) argued the need for national recognition of Maori as a living, communicative and growing language, that, like other languages, would grow and develop to produce new vocabulary for science and technology. She claimed that new Maori terminology offers a pedagogical advantage because many terms state the function of the objects, processes or concepts to which the terms refer. Three of her examples are: a ‘compass’ is taonga kimi huarahi (the object that looks for/finds roads/pathways), ‘contraceptive’ is arai hapu (block pregnancy) and ‘magnet’ is rino kukume (iron that pulls).

flourish. However, we found that studies that attempted to establish empirical support for the importance of learning styles had failed to do so. Greater explanatory power was found for other variables; all students, it appears, learn more effectively when new ideas are linked to their existing knowledge, when curriculum resources are accessible, when genres and ways of making meaning are made transparent, when there is a 'cultural match' between curriculum and student, and when they are helped to develop metacognitive and information processing skills.

Helping students to understand gender

Some researchers believe that students should be helped to understand gender. Common themes in these 'knowledge-based' approaches include providing information and role models that challenge traditional gender assumptions, and encouraging learning activities that help students to analyse gendered assumptions for themselves.

During the 1970s and 1980s, knowledge-based strategies were used primarily to encourage girls into 'male subjects' such as mathematics, science and technology (Delamont, 1999; Gilbert, 1998; Kenway *et al.* 1997). These strategies were supported by attempts to eradicate stereotyped material from textbooks, to pay equal attention to boys and girls, and to provide positive female role models. These policies were not as successful as was hoped, according to a review of gender equity policies in Britain (Delamont, 1999). There were several reasons: the policies focused on girls and women rather than on boys and men, on secondary schools but not on primary, on teenagers but not on teachers and parents, and on what adults thought pupils' ideas were, rather than finding out what students actually thought. Also, the programmes omitted discussion of sexuality and sex, focused on mathematics, science and technology to the detriment of humanities, social sciences and aesthetics, and ignored not only social relationships in the school and workplace, but also the consequences of the de-industrialisation of the male labour market.

Critical literacy

The international research on boys and literacy suggests that teachers can use critical literacy to help students to analyse gender. (Martino, 1998). For example, Webb and Singh (1998) aim to develop English classrooms that "highlight and celebrate a wide range of masculinities, in particular, literate masculinities." (p. 145) They also believe that school texts incorporate 'taken for granted' stories about gender, and therefore students:

"... need to be taught how to read between the lines, to seek out themes which may not be explicitly stated, to read for absences as well as presences, to decode the text in order to discover hidden or suppressed meanings."

However, secondary schools seldom offer opportunities for such self-reflective thinking (Stephens, 1996). To provide such opportunities, an Australian *Boys and Literacy* initiative by Alloway and Gilbert (1997) includes 19 teaching units that focus on a number of issues: the construction of masculinity and femininity through language practices; the relationship between language, gender and culture; the gendered teaching and parenting practices that impact on literacy learning; and the value of critical approaches to literacy, for boys as well as girls, using popular community texts. The construction of Aboriginality and masculinity is also explicitly addressed. Alloway and Gilbert emphasised that the units were produced by teachers who were aware of "the specific institutional and social guidelines of their school sites." (p.2)

Using computers

Semrau and Boyer (1991–1992) suggest that pupils can use critical thinking to evaluate patterns of gender and ethnic bias found both in instructional software and in the profusion of images on the internet.

Changing the curriculum content

The literature offers many suggestions for changing the curriculum so that both boys and girls might do better. Some of these suggestions come from the 'Literacy across the Curriculum' and 'Science, Technology and Society' movements, both of which seek to ensure that curricula have ways of learning that appeal to both boys and girls. Other suggestions concern ways in which subject content can present men and women as people not trapped within gender stereotypes. For example, a New Zealand study showed how elements of both approaches can challenge the narrow gendered assumptions of both boys and girls, while boosting their self-esteem, widening their sense of possibilities for themselves, and prompting critical thinking (Alton-Lee, McBride, Greenslade and Nuthall, 1997).

Achieving change: the need for whole school approaches

Our review showed the need to adopt whole-school approaches if change is to occur. One reason for adopting comprehensive strategies is that a number of researchers see gendered behaviours as difficult to address effectively because students take such an active role in constructing their own gender identity. For example, Davies (1989; 1993) after working with primary students to deconstruct the gendered dimensions of the texts they read and wrote, said:

'...in learning to be coherent members of their own social worlds [children] were actively taking up their assigned gender as their own, in ways not necessarily compatible with the ways their teachers and parents were telling them gender should be done. ... They learned to make sense of the world and themselves through the bipolar categories of female and male ... any discourse about equity that adults might introduce to them could only affect the minor detail of this difference...'
(1993, p. xvii)

To overcome such problems, the evidence in our review suggests that change requires whole-school approaches that include:

- curriculum reform, including integration
- inclusive pedagogy
- better disciplinary practices
- diverse extra-curricular activities
- staff and student exploration of gender issues
- and the valuing of diversity in cultural, gender and personal identity.

Our review also highlighted a number other implications for educational change. These are explored in the final chapter of the review.

What is best for your school?

Schools will draw on a range of sources to develop their strategies that enable them to be responsive to the needs of diverse students. This page presents some suggestions for using the review Explaining and Addressing Gender Differences in the New Zealand Compulsory School Sector: A Literature Review as a tool for professional development in your school.

Suggested Strategy

- Take a whole school approach.
- Involve all staff.
- Give staff plenty of time to prepare for the meeting and to explore the questions that should be raised for your students and your school's unique context.
- Investigate the particular needs of your students and your community.
- Use the curriculum as a focus. Use each curriculum chapter in the main review, remembering that this booklet of 'snapshots' does not **summarise** these chapters.
- Plan a meeting, a series of staff meetings or a teacher-only day to consider the possible implications of the review for your school.

Suggested three-stage plan

1. Preparation for staff members

- Invite individual staff or groups of staff to focus on the research and strategies, each taking just one of the chapters (Chapters 1-11) with a view to presenting their findings to the whole staff.
- Cover each essential learning area (that is each curriculum chapter, Chapters 4-10). Curriculum leaders, or heads of departments could work with interested staff using their subject expertise to focus on the insights the review offers in a particular essential learning area.
- Take 'Chapter 11: Gendered Behaviour in Schools' and identify strategies the research reveals to be effective. This chapter (like Chapter 3) is relevant for all staff and may be of particular interest to the deputy principal and the assistant principal. Other staff such as support staff, caretaker staff and counselling staff may also find Chapter 11 useful.

2. Approach

Suggestions for introducing gender issues:

- The rugby story on page 29 of the review highlights concerns for the well-being of both boys **and** girls and illustrates the problems that arise when students are positioned as 'opposites' by gender. You could use this example to help staff reflect on how a whole school approach to gender issues can support the learning and well-being of girls and boys.
- Use the table on page 24 of the review as an example to illustrate how gender gaps vary according to ethnicity and subject area. The table shows how important it is to ask which girls and which boys we are considering. The table compares New Zealand students' performance with international means. The table is just a beginning point. The summary of the National Education Monitoring Project findings in Chapter 12 provide another possible introductory approach for primary and intermediate schools. You may wish to start with findings from the review that are most relevant for your school and your students.

Suggestions for reporting back and discussion:

- Ask individuals and/or groups to report back on the curriculum area or other topic that they have examined.
- Suggest that staff consider strategies from the review that have been found to be effective.
- Suggest a responsive approach to considering implications for the particular needs of your school and your students which may be different.

Suggestions for a summary session:

- Identify questions that the research raises for your school. (For example, are there markedly different patterns of achievement for boys and/or girls in different curriculum areas and at different levels? For which girls and which boys? To what extent are differences evident for students by gender, ethnicity or social class? Do you need to find out whether gender is relevant to bullying, harassment, use of space, attitude to literacy or numeracy, participation, absenteeism, suspensions, or early leavers in your school? Do boys in your school receive affirmation for diverse ways of being masculine or is homophobic abuse a factor in restricting boys' educational opportunities? Are girls using social exclusion as a bullying strategy with other girls? How do your social studies and health programmes address issues raised in the review?)
- Decide on strategies to use to get more and systematic information about possible gender and other related equity issues for your school.

3. Reflection and Action:

- Give staff time for reflection and discussion.
- Involve all staff in planning a whole school approach.
- Develop strategies that are designed for the needs of your students and your school.
- Build in on-going evaluation in order to keep monitoring and improving your strategies.
- Bring the staff back together to evaluate the overall impact of your whole school approach.

A copy of *Explaining and Addressing Gender Differences in the New Zealand Compulsory School Sector*, may be obtained from Learning Media Ltd (Tel: 0-4-472 5522, E-mail: orders@learningmedia.co.nz).

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The references listed below are only for research mentioned in this booklet and therefore they omit the work of a number of leading researchers in New Zealand and overseas. A full list of references is included in the review.

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