Gender Differences in Education

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The purpose of this paper is to draw attention to the complex and problematic nature of gender differences in education. Recent attempts to simplify the issue of boys' achievement in school makes it essential that pre-service teacher educators, in particular, are informed about the complexities involved and the contradictory research. One area of interest is the shift of concern about girls' achievement to concern about boys' achievement. This paper will examine the recent Education Review Office (ERO) report *The Achievement of Boys,* which assumes that gender achievement differentials are a result of different learning styles, in order to argue that quick-fix solutions and popular beliefs are no solution to in-depth research and well-informed opinion.

As recently as 1995, the ERO report *Barriers to Learning*, identified barriers to learning for girls. At secondary school level these included issues such as the low numbers of girls in mathematics, science and technical subjects; the absence of women teachers as role models in mathematics, science and technology; and the absence of women in school senior management positions *(ERO report , No. 9, Winter, 1995).* Similar barriers were identified at primary level, as well as problems with attitudes towards girls and mathematics from the home. The report recommended that schools need to look at ways they can provide opportunities and incentives for girls to achieve at a higher level. Four years later, the latest ERO report , *The Achievement of Boys*, (Hereafter the *ERO report, boys*) no longer sees these problems in schools. This is either a remarkably quick solution time or an abandoned issue.

There is a considerable body of literature regarding the academic achievement of girls and the gender difference in education, beginning with early childhood participation in different activities. Several studies report a gender bias in participation of activities from the age of two or three (Meade & Staden 1985; Slyfield & Sturrock 1993). Girls are more likely to engage in collage, art, music, dough and family play, whereas boys

are more likely to be involved in manipulative activities such as lego, blocks, sand play
and carpentry or gross motor play, such as trolleys, bikes and climbing. The former activities are expressive, and occur in areas where teachers spend much of their time. The latter activities are associated with spatial and mechanical problem solving abilities, which are connected to the development of mathematical and scientific concepts.

Evidence of a gender gap has been found in primary schools with some interesting trends. Firstly, the gender gap in language has been found to decrease as children get older (Noonan, 1995). In mathematics, however, the achievement level attained at the age of five remains relatively fixed over time for girls, especially those in low achieving groups. Boys in low groups tend to progress at a much faster rate than girls do (Slyfield & Sturrock, 1993). This implies that, even though the gender gap overall is decreasing, by the age of nine, some girls appear to make no porgress in Mathematics.

At higher levels, girls are less likely to choose subjects that have been traditionally popular with males, although this tendency is improving. Despite improved achievement, girls continue to have lower expectations of themselves, and underestimate their performance (Slyfield & Sturrock, 1993). This continues into graduate programmes, where female students who outscored male students at school express more anxiety about their abilities (Nightingale & Sohler, 1994). By the time women enter the workforce, they are more likely than men to leave school with qualifications, but they currently earn a "median 80.3 percent of their male counterparts' pay, or an average $24,800 compared with $30,800" (Horwood, A. *NZ Herald* 9/3/1999, Section C, pp1).

In tertiary institutions, women continue to be under-represented, particularly in higher level positions. The University of Auckland had only 7.5% women professors in July 1994, although women now make up over 50% of the student body at tertiary institutions. It is only at the level of Assistant Lecturer/Senior Tutors/Tutors/Teaching Fellows that women make up over 50% of the staff (Wilson, 1995). Even in schools,

where women make up as much as 80% (or more) of the staff, men continue to be numerically dominant in senior positions (Leicester, 1991). Fiona Sturrock (1993), asks why women are gaining improved opportunities from their improved achievement.

The critical issue of the discrepancy between girls' increased achievement and their limited opportunities is not referred to in the ERO report *'The Achievement of Boys'*, despite its centrality to any research on the gender differential in New Zealand. The report focuses on the analysis of school certificate results and ERO findings on the quality of management performance in schools. Learning styles, behaviour management and the role of teachers are given as reasons for the achievement gap between boys and girls. In exploring the differences between single sex and co-educational schools and investigating schools that have innovations to improve boys' achievement the report concludes by stating schools' legal obligation to "identify and remove barriers to achievement" (1999:42), and suggests that in order to achieve this, schools may be required "to assess and address the achievement of boys" (1999:42).

School certificate results are given for 1998, for girls and boys (1999:6). A grade 'A;' was attained by 8.9% of girls compared to 7.1% of boys (difference of 1.8); and a grade of 'B' attained by 24.6% of girls compared to 20.6% of boys (difference of 4.0). The gender difference occurs across all ethnic groups, with the largest difference occurring between Europeans, the smallest between Pacific Island peoples. The largest gap occurs in English. No other subject details are given except a reference to subjects with much smaller gaps. It is not made clear if any subjects show a gender gap in the other direction.

Reference is also made to the study conducted by the International Association for Evaluation of Educational Achievement (IEA), an international study conducted in 1990, which looked at the reading literacy in 32 countries of children aged nine and fourteen. The *ERO report, boys,* refers to the large gender gap found at age 9, pointing out that two thirds of children attending reading recovery in New Zealand are male (1999:7). What the *ERO report, boys,* fails to mention is that the difference was considerably decreased for the fourteen year olds, with female students performing

better in narrative and expository writing only (Brusselman-Dehairs, Henry, Beller & Gafni 1991).

The actual differences were:

Table 1. Standardised Reading Literature Scores

	Nine year old scores	Fourteen year old scores
Girls	539	549
Boys	519	544
Difference	20	5

(Brusselman-Dehairs, Henry, Beller & Gafni 1991)

The reading material choices for the nine year olds may be significant and deserves further research. Girls were more likely to read books voluntarily. Boys were more likely to choose comic books, newspapers and magazines. The difference was not in the amount of material read, but in the type. For the fourteen year olds, the number of boys choosing books was increased greatly (Brusselman-Dehairs, Henry, Beller & Gafni 1991).

The *ERO report, boys*, ignores the important information that boys achievement did not decline between 1986 to 1997 (Gerritsen, 1999). During this time girls' levels of achievement increased significantly. This is a trend that is also apparent in the United Kingdom, where girls are also outperforming boys in many areas. The increase in girls' achievement followed the introduction of coursework assessed syllabuses (GCSEs). Since the introduction of internal assessment, the number of all student achieving pass grades has increased, although boys have just increased their levels less dramatically (Miller, 1992).

The section of the *ERO report, boys*, 'Addressing Boys' Achievement' briefly considers the possibility of factors such as socio-economic status and family support. These are, however, dismissed: "Enough boys across all socio-economic groups

achieve poorly in comparison with girls to show that there is a pattern of boys' under-achievement" (1999:7). A range of possible explanations are suggested including: external influences contributing to a macho culture (such as family, television, mass media), the rise in single parent families, different learning styles and behavioural issues. The greatest emphasis is on the last two.

The issue of learning styles has become a very popular one, not just in relation to the differences between boys and girls, but between all individuals. It is here that the report appears contradictory. On the one hand, it states that boys prefer a transmission style learning, where the emphasis is on memorising facts and rules. They will also, supposedly, forfeit understanding for speed. The next paragraph, however, states that boys are more likely than girls to take risks, offer their opinions and guess (1999:9). These behaviours seem at odds with a 'being told' style of learning.

Several studies show that boys also score higher on measures of curiosity (Velde, 1999), and prefer non-fiction reading material (Rutledge, 1997). Neither of these behaviours appear to belong to children who like to be 'told'. In fact, they suggest children who prefer to find things out for themselves.

There is evidence that maturity may have some bearing on the differences in reading ability. Three out of the top six countries in the 1990 IEA study (in terms of gender gap size) have a school starting age of five. Only one other country with that starting age was included in the sample (Brusselman-Dehairs, Henry, Beller & Gafni, 1991). Children in New Zealand are placed into Reading Recovery Programmes at the age of six, while many other countries have not even begun to teach reading at this age (Rutledge, 1997). Is this giving boys an early message that they are failures at reading?

When considering children's writing performance, the *ERO report, boys,* concluded that girls were more able to produce a piece of work close to what the teacher requested, while boys required more support (1999:10). There is evidence that boys do not perceive 'story writing' as real work, but prefer to write more factual pieces

(Askew & Ross, 1988). It may be that more opportunities for this type of writing need to be offered, and the pieces valued.

The *ERO report, boys,* also suggests that teacher gender is a causal factor in gender achievement differentiation.

> "Most teachers are women. It is argued that some schools place a greater emphasis on feminine values and that teachers adopt teaching styles and assessment practice that favour girls over boys. This may lead to differences in the performance of boys and girls at school that are unrelated to their ability. Changes in teaching practice may be needed to counter boys' perception of literacy as a feminised subject" *(1999:9).*

The summary states that female teachers may not "fully appreciate the specific needs of boys." (1999:41). While the report offers evidence of how teacher bias can affect the marking of English folders in GCSE English (bias towards descriptive writing over factual writing, 1999:10), it offers no other supporting evidence for this statement.

Wilkinson (1997), also initially suggests that teacher gender may have an impact on children's learning. He investigated data from the 1990 IEA study on reading literacy, in an attempt to locate the causes of gender and language gaps. Elley (in Brusselman-Dehairs, Henry, Beller & Gafni, 1991), had suggested that gender gaps occurred in the countries where there were high numbers of women teachers (Brusselman-Dehairs, Henry, Beller & Gafni, 1991), and Wilkinson explored this along with other possible factors. He hypothesised that boys may be unable to identify with female teachers, and this led them to consider reading as a less worthwhile activity.

At the time of the survey, 76% of teachers were female, compared to about 60% in other countries. In terms of female teachers, analysis of the New Zealand data was very interesting. It showed that there was indeed a correlation between achievement by gender and the gender of the teacher. It ran, however, against the hypothesis – the gap was smaller in classrooms taught by women teachers.

Wilkinson's research is very comprehensive, covering not just the children and their results, but also the teachers (about the make-up of their class, their training and teaching methods) and principals (school, community and the availability of resources). From this information, he suggests that it is in fact female teachers' instructional practice that assists the boys. It is not the case that female teachers are unable to "fully appreciate the specific needs of boys". (1999:41)

Instead, they are more likely to provide the tools needed for children to become readers. Female teachers were more likely to assess lower order skills (for example word recognition), teach children how to read expository essays and documents, and to provide a language rich classroom. They were less likely than male teachers to see the teaching of reading as the bottom up process of working through graded materials. Interestingly enough, smaller gaps were also found between children with a language other than English in the home and those with English as a home language, when they had a female teacher.

The *ERO report, boys,* considered behaviour as a differential factor (1999:10). Boys are the majority of those suspended and expelled, and also present most of the problems in class. The report suggested that the lack of positive male role models for boys is having an effect. Rutledge (1997), points out that the majority of senior and management roles in teaching are held by men, as are the positions of power and policy makers. The leaders of the government and the opposition may be female, but women are under-represented in most other roles in parliament, especially Cabinet.

Boys appear less ready than girls when beginning school. A checklist based on aspects that teachers consider important measures of school readiness was given to 300 parents (Renwick, 1997). It revealed that whereas parents considered 75% of their female children as 'easily understood', only 51% of male children were considered so. 59% of boys compared to 82% of girls were able to recognise and print their names, and girls were four times better at letter identification than boys.

From an early age, boys exhibit different behaviour to girls. Their focus at pre-school tends to be outdoors, and on gross motor movement (Meade and Staden, 1985). The

emphasis in most classrooms is on fine motor movement, a sudden change from pre-school experience. Gerritsen (1999), listed some schools that are developing ways to deal with the change in learning experiences. One school offers more practical hands-on type learning experiences. Another school has increased the opportunities for movement, using movement for expression. This has led to some boys improving their verbal expression.

Gerritsen (1999), discusses the use of role models as behaviour modifiers. One school, with only one male teacher, has found ways to involve positive role models in their school programme. The school has hired a male teacher aide (based on ability not gender), a male groundskeeper (through community taskforce), and a Special Education Services staff member who visits one lunchtime a week, as does a male parent. In the future, the school hopes to include ex-pupils attending the local college in this programme.

Since implementing the programme, playground violence has lessened, and the behavioural improvements have crossed into the classroom. This supports the suggestion made by the *ERO report, boys,* that positive male role models may assist with behaviour modification (1999:41). The initiatives by the school suggest other ways of increasing male role models than hiring male teachers. It would be between two and four years before an initiative to increase the numbers of male teachers would have an effect in schools. There are a large number of children in our schools that need positive role models now, waiting for a male teacher would take too long.

The *ERO report, boys,* raises the issue of pre-service training when considering the role of teachers in dealing with boys learning needs (1999:11). Recommendations are made for a range of delivery styles to accommodate the needs of boys and girls. However, Wilkinson (1997), found a smaller gap in gender in those classes taught by teachers who had longer pre-service training. Continuing in-service training also helped close the gender gap. The quality of teacher education appears to be crucial, however, in this age of competitive training providers, shorter courses and high tertiary fees act against such quality.

Differences in achievement were report ed between single sex and co-educational schools (*ERO, 1999:12).* In School Certificate, girls in single sex schools do better than co-educational schools in every decile, whereas boys in single sex schools do better than co-educational schools only in the high deciles. This is reversed in the lower deciles. This may be because of the different entrance requirements that single sex schools can have. Single sex girls' schools outperform both boys' and co-educational schools in most measures of management performance. Although the boys in single sex schools achieve higher exam results than boys in co-educational settings, they perform less well on management indicators than co-eduational schools. The areas with the biggest difference were curriculum delivery and student support.

Table 2. Overall Performance Of Boys-Only, Girls-Only And Coeducational Schools Against Indicators Of Management Performance (Pg 17)

Indicator	Boys Schools	Girls Schools	Coeducational
Effective curriculum delivery	40%	70%	60%
Safe physical and emotional environment	45%	70%	80%

Overall, boys are more likely to attend a poorly performing school than girls.

These results indicate that boys at single sex schools are not getting all the support they need. Boys do achieve better in exam results, but this may be because boys' schools tend to emphasise examination performance over other things. When analysed, most boys' schools teach in a traditional way, favouring the more transmission style approach. If examination results from such schools is the evidence being used to say that boys favour 'being told', then we are selling boys short. It is not enough to give boys the conditions where they do very well at exams, if it means that they lose out on all other areas.

There is evidence that girls are better at collaborative activities than boys (Askew and Ross, 1988). Girls tend to engage in these sorts of activities from early childhood.

They participate in areas of play that encourage communication and demand a level of co-operation. Boys on the other hand are often found in either large play areas (outdoors), or a very small, manipulative play areas (ie lego). When boys do play together, it is usually in a competitive way, and they will often turn collaborative situations into competitive events (Askew & Ross, 1988).

Boys can learn the skills of working co-operatively. A major aspect of this concerns communication. Askew & Ross (1988), discuss a study that brought together the male children from the first year junior classes for a six week programme on relationships. The lessons were structured similarly each time, so that the children could remember what was expected of them. They began with a warm-up activity such as clapping names, then discussed in pairs a simple thing, like 'my favourite food'. They then went into groups of four, and had to relate what their partner said to the rest of the group. Continuing in small groups, the next step was to carry out a task, such as a group collaborative story. They shared their results, before finishing with a physical activity, to develop closeness (ie trust walk).

Although during the initial sessions the children were restless and found the tasks difficult, they soon began to enjoy the time together, and definite gains were made in both speaking openly and listening well. The effects carried across into the mixed classes. The research seems to indicate that it is possible to give boys the skills they need to participate in effective groupwork, if teachers are prepared to put in the effort. It also has important positive spin-offs for their language development.

The *ERO report, boys,* looked at specific schools in order to examine what factors affected the size of the gender gap. It found that in schools where boys achieve better than girls there may be shortcomings in areas like English (where girls tend to perform well), or extra attention paid to areas like mathematics (where boys tend to perform well). Student support levels again impacted strongly on this result, with schools that take a strong view on providing a safe environment having a positive effect on boys learning.

In schools where girls performed better than boys, a significant factor was the achievement of girls in traditional female subjects, such as Home Economics, English or clothing, or poor performance in more male dominated subjects. Again, student support was an issue. There were many behavioural problems involving boys in the classrooms and the playground in schools where the level of student support was low. This supports ERO's concerns that behaviour issues affect boys learning negatively.

One whole area that has not been addressed by the *ERO report, boys,* is that of boys and literature. The majority of children portrayed in books are still male, but they are portrayed as doing a range of exciting activities. They are very rarely seen reading, or participating in any quiet activities (Askew & Ross, 1988). It is important that teachers do not discourage boys when they choose their reading material. If teachers do not accept the boy's choice (for example Goosebumps books by RL Stine) the message is sent to the boy that he cannot be trusted to take control of his learning, that he is unable to make good decisions. It is important that boys learn to read for fun. Once they enjoy reading, they can make choices that will develop their learning.

Both the timing and the focus of the *ERO report, boys,* are interesting in themselves. Girls have performed at a much higher level in English for many years, without it being such an issue. In 1987 for example, girls achieved a 19.7% difference on A and B grades (Rutledge, 1997, SET, Vol 1). Some schools continue to achieve high results because of girls success in traditional female subjects (ERO, 1999:29). At school leaving age, boys still outperform girls in maths and science, although at bursary level, the results are less clear (Gerritsen, 1999). Indeed, traditional trends seem to be still evident, despite the recent concerns about boys in schools. I suggest that this sudden concern may well be a knee-jerk reaction to the perception that girls are performing well in areas that have traditionally been subject to 'male ownership'.

Another topical issue that appears to interest ERO, despite the paucity of research, is that of the effect (if any) of women teachers on boys' achievement. The 1995 ERO report, *Barriers to Learning* briefly raises the issue of cross-gender, teach-pupil interaction.

> Eight schools reported unconvincingly that girls in their school were unlikely to face barriers to learning because all of the teachers were women. Some stated that schools in which all teachers are women presented a barrier to the achievement of boys (1995).

References are made to a school which had identified problems with boys and their achievement in language and was initiating a programme to meet their particular interests. The school had not, however, devised any programmes to meet the specific needs of girls, or provide incentives to raise their achievement levels.

Although attracting males into the teaching profession has become a major focus of the government's efforts to increase boys' achievement, there is little evidence to suggest that this will make any difference. Indeed, other issues are in danger of being ignored if this remains the focus. It should be of continued concern that girls' increased achievement is not leading to increased opportunities. Socio-economic issues are not addressed by the 1999 ERO *Achievement of Boys* report . The complexity, time and money required to research such issues in depth may make recruiting more male teachers a more palatable option.

Conclusion

My argument that girls' achievement should remain an important area of concern does not in any way lessen the need to also focus on boys. Indeed, both boys' and girls' learning needs must be addressed. *The Achievement of Boys* report has gone some of the way towards suggesting ways that some of these needs can be addressed, but it needs to go further. In-depth, long-term research is needed on the possible causes of gender difference in achievement. If we choose to accept what the *ERO report, boys,* has to say, we are in danger of selling boys short by not finding the correct solutions to the real problems. Girls' achievements may be reversed and female teachers alienated. Schools should be careful not to rush into implementing strategies that might further endanger boys' learning, or might overturn the successes that have been achieved by girls in the last twenty years.

Bionote

Kylie Inns is a primary graduate student at ACE. This topic gained her interest when the 1999 ERO report *The achievement of boys* was published.

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