Improving the Educational Outcomes of Boys

*Interim Report – June 2002*

to

ACT Department of Education, Youth and Family Services

by

Dr Andrew J. Martin
AJ Martin Research Pty Ltd

The ACT Department of Education, Youth and Family Services welcomes comments or feedback on this Interim Report.

To comment or seek information about this project please contact the Equity Executive Officer, Curriculum Initiatives Section.

Telephone: (02) 62059346. E-mail: ian.hunter@act.gov.au
IMPROVING THE EDUCATIONAL OUTCOMES OF BOYS

INTERIM REPORT

to

ACT Department of Education and Community Services

Dr Andrew J. Martin

AJ Martin Research

June 2002
# CONTENTS

**EXECUTIVE SUMMARY** .......................................................................................................................... 5
  - Review of literature ................................................................................................................................. 5
  - Analysis of ACT motivation data ........................................................................................................... 7

**PART 1. REVIEW OF LITERATURE** ........................................................................................................ 10
**PAREMETERS OF THE LITERATURE REVIEW** .................................................................................. 10
**GENDER DIFFERENCES** ....................................................................................................................... 12
**ACT DATA** ........................................................................................................................................... 15
**MYTHS** ................................................................................................................................................ 16
**GENDER EQUITY** ................................................................................................................................... 17
**STRATEGIES AND INITIATIVES IN THE ACT** ..................................................................................... 19
  - ACT Government Schools Plan 2002-2004 ......................................................................................... 19
  - The Gender Equity Strategy .................................................................................................................. 20
  - Across Curriculum Perspective Statements ......................................................................................... 20
  - Student Support Action Plan .................................................................................................................. 20
**MASCULINITY AND GENDER CONSTRUCTION** ................................................................................ 21
**PRINCIPLES FOR ASSISTING BOYS (AND ALL STUDENTS)** ............................................................. 24
**TEACHING AND LEARNING IN THE CLASSROOM** ............................................................................ 27
  - Dealing with diversity .............................................................................................................................. 27
  - Promoting active learning ....................................................................................................................... 29
  - Developing higher order thinking .......................................................................................................... 30
  - Creating effective learning zones .......................................................................................................... 31
  - Promoting success .................................................................................................................................. 31
  - Providing effective feedback to students ............................................................................................... 33
  - Recognising and creating learning windows ......................................................................................... 33
  - Developing good relationships .............................................................................................................. 34
  - Developing productive pedagogy .......................................................................................................... 35
  - Incorporating boys' perspectives .......................................................................................................... 36
**SCHOOL-LEVEL ACTION** ....................................................................................................................... 38
  - Gender construction and gender equity ................................................................................................. 38
  - School culture and school effectiveness ............................................................................................... 39
  - Student input and student recognition ................................................................................................. 40
  - School staffing ...................................................................................................................................... 40
  - Pedagogical leadership ........................................................................................................................... 41
**LINKING SCHOOLS WITH THE ‘OUTSIDE WORLD’** ............................................................................ 42
  - VET in schools ....................................................................................................................................... 42
  - Workplace learning and school-industry links ..................................................................................... 44
  - Community-based learning .................................................................................................................... 45
Parents/carers and home ................................................................. 45

STUDENT-LEVEL ACTION .................................................................. 47
  Mentoring ...................................................................................... 47
  Role models .................................................................................. 48
  Goal and target setting ................................................................. 48
  Peers ............................................................................................. 49

MOTIVATION ..................................................................................... 51

FEAR OF FAILURE AND MASCULINITY ........................................ 51

LITERACY ......................................................................................... 53
  Book selection .............................................................................. 53
  Developing a reading culture at school ......................................... 54
  Book aversion ............................................................................... 55
  Teaching the ‘tricks’ of literacy .................................................... 56
  The school library ........................................................................ 56
  Transition points .......................................................................... 57
  Literacy in other domains .......................................................... 58

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) ......... 59
  Benefits of ICT ............................................................................. 59
  Leading ICT practice .................................................................. 60
  Challenges in implementing ICT ................................................ 61
  ICT and literacy ........................................................................... 61

PART 2. STUDENT MOTIVATION IN THE ACT .................................. 63
  INTRODUCTION ........................................................................... 63
  A MODEL OF MOTIVATION .......................................................... 63
  METHOD ....................................................................................... 65
    Sample and procedure ................................................................ 65
    Materials .................................................................................... 65
      Boosters .................................................................................. 66
      Guzzlers .................................................................................. 67
    Measurement and statistical analysis ......................................... 68
  RESULTS ....................................................................................... 68
    Confirmatory factor analysis .................................................... 68
    Descriptive statistics and reliability .......................................... 71
    Year-level effects ...................................................................... 72
    Gender effects ........................................................................... 72
    Interaction of gender and year level ......................................... 75
    Correlations between motivation and literacy and numeracy ...... 75
    The role of ethnicity .................................................................. 78
    The role of socio-economic status ......................................... 80
EXECUTIVE SUMMARY

Review of literature
There are gender differences in achievement, engagement, motivation, and students’ orientations to school and schoolwork. Many of these show that boys perform more poorly than girls (eg. in literacy, achievement, retention, school completion, and motivation). There are, however, areas in which boys are not under-performing girls (eg. numeracy).

There are a number of assumptions and misconceptions that have the potential to muddy the waters of constructive research and debate into boys’ education. Some assumptions are that girls’ and boys’ interests are competing, boys comprise a homogeneous group, boys need special role models or the particular involvement of males, and boys do not have academic aspirations.

Boys’ educational outcomes can be enhanced within a gender equity framework. This means that strategies enhancing boys’ educational outcomes can also be effective for girls. Four areas of action under this framework are: understanding the process of gender construction, enhancing teaching and learning, developing post-school pathways, and assisting schools and teachers to support change.

Taken together, the ACT Schools Plan, Across Curriculum Perspective Statements, the Gender Equity Strategy, and the Student Support Action Plan document provide a platform for enhancing the educational outcomes of all students and are consistent with the optimistic and inclusive perspective of the present report.

The social context within which boys and girls operate is very influential. A major way in which this context affects boys is through the construction of gender and what it means to be a boy or a girl. Amongst a number of social contexts in which gender construction takes place is the school which operates as an ‘agent’ of gender construction and also as a ‘setting’ in which gender construction occurs. It is important that boys understand how and the extent to which masculinity is socially constructed and then look at how this construction can sit uncomfortably with success at school.

A set of core principles guides the design and development of strategies aimed at enhancing student outcomes. It is important to: involve students (especially boys) in
the development and implementation of programs, support change through the professional development of teachers, integrate strategies across the curriculum, strive for uniform (targeting boys and girls) strategies wherever possible (but recognise that targeted initiatives have their place), and direct significant resources to the teaching, learning, and classroom context.

The teacher and class levels are considered amongst the most critical points at which student outcomes can be improved. Important ways to enhance outcomes through teacher- and classroom-level action involve assisting teachers in: dealing with diversity, promoting active learning, developing students’ higher order thinking, creating effective learning zones, promoting success, providing effective feedback to students, recognising and creating learning windows, developing good relationships with students, engaging in productive pedagogy, and listening to and valuing student perspectives.

Research shows that school-level action can strongly support teacher- and class-level action to enhance the educational outcomes of all students. Students can benefit from schools effectively modelling principles of gender equity, addressing an anti-academic culture, building a proactive and optimistic school culture, valuing student input into school policy and procedures, celebrating academic excellence and personal bests, developing a staffing structure and mix that sends appropriate messages to students, and developing school-wide pedagogical leadership roles to support strategies in the classroom.

Students value school more and see its relevance to them and to the world more generally when school and what they learn are seen in the context of other processes, agents, and systems outside the school. School and school learning can be contextualised in this way through VET, workplace learning, effective school-industry links, community-based learning, and links with parents/carers and the community.

Research has shown that students can be differentiated in terms of their motivation to strive for success or avoid or accept failure. Our aim as educators is to develop students who are success oriented. These students are high in self-esteem, confident, persistent, value school, and are resilient to setbacks and challenges. Failure avoiders comprise too large a group of students (across Australia) who are grounded in a fear of failure. Fear of failure has links with students’ constructions and
conceptions of masculinity and impacts negatively on their motivation, orientation towards schoolwork, enjoyment of school, and achievement.

Literacy consistently emerges as a distinguishing feature of boys’ and girls’ educational outcomes. Research shows that boys perform more poorly than girls in a number of literacy domains. Addressing the literacy gap requires: careful selection of diverse reading material that is interesting to boys but also provides scope for critical analysis of gender construction, auditing reading habits within the school and using findings to promote a reading culture, recognising and responding to boys for whom book aversion is a problem, explicitly teaching the many ‘tricks’ of literacy, supporting and extending the important role of the library, developing strategies to assist students’ transition from primary to secondary school, and assisting students to effectively deal with literacy demands across the curriculum.

The integration of ICT into the classroom has the potential to expand students’ skills for the world of work and the emerging knowledge-based economy as well as assist students experiencing difficulties academically. ICT needs to be high quality, be based on sound pedagogical principles, cater to diverse groups of students, and be supported by appropriate professional development of teachers.

**Analysis of ACT motivation data**

Motivation is critical to students’ achievement and enjoyment at school. Motivation is multi-faceted comprising factors that enhance motivation – ‘motivation boosters’ (self-belief, value of schooling, learning focus, planning and monitoring, study management, persistence) and factors that reduce motivation – ‘motivation guzzlers’ (anxiety, low control, failure avoidance, self-sabotage).

The Student Motivation Scale (Martin, 2001b, in review c) measures these boosters and guzzlers and was administered to 1,930 Year 7 and Year 9 students from eight government schools in the ACT.

Data show that Year 7 students are significantly higher than Year 9 students on all boosters (self-belief, learning focus, value of school, planning and monitoring, study management, persistence). This is consistent with research elsewhere showing that students’ motivation can decline in the middle years of high school. However, Year 7 students are also significantly lower than Year 9 on control and higher in failure avoidance.
Across Years 7 and 9, girls are significantly higher on learning focus, planning and monitoring, and study management. Girls in Years 7 and 9 are also significantly higher in anxiety. In Year 7 only, boys are significantly higher in failure avoidance and self-sabotage and girls are significantly higher in persistence. In Year 9 only, girls are significantly lower in perceived control.

Self-belief and persistence are correlated with literacy and numeracy. However, the strongest effects in literacy and numeracy are found for guzzlers such that low control, failure avoidance, and self-sabotage are negatively correlated with literacy and numeracy. Anxiety is also negatively correlated with numeracy. Correlations between motivation and both literacy and numeracy do not differ markedly between boys and girls.

ESL students are significantly higher than non-ESL students in value of schooling, learning focus, planning and monitoring, and study management. However, they are also lower in perceived control. Gender effects are generally consistent across ESL and non-ESL students. It is uncertain as to how representative this group of ESL students is – not only in terms of the ACT but also in terms of other states and territories in Australia. It is therefore recommended that generalising to the broader ESL population should be done very carefully.

Lower and middle socioeconomic (SES) students are significantly lower than upper SES students in control and significantly higher in failure avoidance. Middle SES students are significantly higher than upper SES students in self-sabotage. Gender effects are generally consistent across lower, middle, and upper SES student groupings. It is uncertain as to how representative students in these three SES groupings are of SES groupings in the broader population – not only in terms of the ACT but also in terms of other states and territories in Australia. It is therefore recommended that generalising to SES groupings in the broader population should be done very carefully.

Enhancing motivation boosters involves: promoting success in the classroom, reworking students’ notions of success to encompass such elements as improvement and personal bests, challenging students’ negative thinking, promoting a focus on mastery rather than excessive competitiveness, and contextualising students’
learning into their lives and interests, their future pathways, the world more generally, and their other school subjects.

Reducing guzzlers involves: enhancing students’ sense of control through a focus on their effort and strategy, giving them choices over lesson objectives and assessment tasks and criteria, and providing effective and consistent feedback based soundly on students’ work. It also involves addressing students’ fear of failure through developing a class and school climate of cooperation and personal bests, allowing students to make and learn from mistakes, and showing students that their worth as a person is independent of their academic achievement, thereby reducing their fear of failure.

Academic resilience is introduced as a concept reflecting students’ ability to overcome setback and challenge and effectively deal with pressure and stress in the school setting. It is proposed that the well-rounded student is one who is energised and motivated to achieve but is also resilient when the going gets tough. Research has shown that resilient young people have a number of protective factors in their lives and relatively few risk factors. In the academic domain it is proposed that academic resilience is developed through promoting motivation boosters (protective factors) and reducing motivation guzzlers (risk factors).
PART 1. REVIEW OF LITERATURE

This part of the report presents findings on the review of literature. The primary purpose of this review is to present a conceptual background to the issue of boys’ education, explore empirical data pertaining to gender differences in Australia, identify strategies that can assist all students in reaching their academic potential at school, and synthesise these elements into a framework for consideration by policy makers and educators. More specifically (and consistent with the Project Brief), it is to provide direction for improving educational outcomes of boys with regards to levels of schooling, retention, engagement with learning, and literacy and numeracy.

PARAMETERS OF THE LITERATURE REVIEW

The scope of research into boys’ education is broad, comprising large-scale quantitative studies, qualitative research, analysis of government data, case studies, meta-analyses, and reviews of literature. There is a vast amount of data and research conducted overseas as well as a large corpus of research in Australia. Most research has spanned three decades with the bulk of activity in the 1990s.

Given this breadth of activity, there was a need for the present review to set some parameters at the outset. Accordingly, searches were made of Australian bibliographic databases (eg. Australian Education Index) spanning the 1990s and beyond and with particular focus on research from 1995 to date. Searches were also made of international bibliographic databases (eg. ERIC, Psycinfo) spanning the 1990s and beyond with particular focus on research from 1998 to date.

Keywords used in all searches were: “Boys and . . .

- Achievement
- Learning
- Motivation
- Engagement
- Retention
- Literacy
- Numeracy
- Vocational education
- Technology
Computers.

The focus of the review of literature was on a number of key areas that have been identified in the literature as salient in boys’ education. These include:

- Gender differences in educational outcomes in Australia
- Common assumptions that have been challenged by evidence-based research
- Gender equity
- Perspectives of boys
- Masculinity and gender construction
- Strategies for targeting constructions of masculinity
- Principles for strategies assisting boys
- Teaching and learning in the classroom
- School-level action
- School links beyond the school
- Student-level action
- Motivation
- Academic resilience
- Fear of failure and masculinity
- Literacy
- Information and communication technology (ICT).

In this report, emphasis is given to action and strategies used to enhance the educational outcomes of boys – as an applied focus was emphasised in the Project Brief.

One important consideration given to all strategies included in this review is that they be academically beneficial to both boys and girls. It is the position of this review that an inclusive approach is preferable. Therefore, care has been taken to ensure that strategies proposed as being helpful to boys must have the potential to assist girls as well. Following from this, a good deal of the report refers to strategies aimed at enhancing all students’ educational outcomes and not just boys’ educational outcomes.

What must also be recognised is that variation between boys can be large and that dealing with boys as an homogeneous group ignores the fact that differences
amongst boys can be large. Indeed, to the extent that differences between boys and girls are discussed, differences amongst boys and differences amongst girls must also be recognised. Too often we deal with generalities without recognising the diversity in our student body. According to Noble and Bradford, “there are thousands of individuals from both genders who are simply not recognisable from the descriptors we are giving to their gender. Their behaviour, learning style, achievement and demeanour are nothing to do with under-achieving boys or focused, self-managing girls” (2000, p. 5-6). What this underscores is the need for educators to be able to accommodate diversity. Our student body is becoming increasingly heterogeneous and to enhance educational outcomes of all students requires an ability to effectively teach to this diversity.

A focus on boys in this report does not imply that outcomes for girls are entirely satisfactory. Quite correctly it has been pointed out that a danger of focusing exclusively on gender differences in the school years can distract attention from inequities in the post-school years where females continue to receive lower wages and are over-represented in the lower echelons of organisational structures: Jackson notes that “while girls are now achieving better academic results than boys at age 16, there is little evidence to indicate that this is leading to improved post-school opportunities in the form of training, employment, career development and economic independence for the majority of young women” (1998, p. 22; see also Office for Standards in Education & Equal Opportunities Commission, 1996).

**GENDER DIFFERENCES**

Before a conceptual analysis of the issues surrounding boys’ education and analysis of strategies designed to assist boys academically, it is important to set the context for this review and other national treatments of this issue. There is now compelling evidence that there are gender differences in students’ engagement, motivation, achievement, and students’ relationship to schoolwork and school. For the most part, these differences are not in boys’ favour. Notwithstanding this, there are areas of their schooling in which boys are performing better than girls and to this extent, educational outcomes of girls need to be addressed in ways that are mutually beneficial to boys and girls.
Achievement: On average, girls outperform boys in a greater number of subjects and there are more girls amongst the higher achieving students (Collins, Kenway, & McLeod, 2000). Although the gender gap in achievement has existed for over 100 years (Kamperos, 2000), in recent years this gap has increased (MacCann, 1995). According to MacCann, the increasing gap is due to a shift in boys' position to the extreme ends of the performance scale. For example, in 1984, 65% and 53% of boys were in the top and lowest Year 12 performance bands respectively. In contrast, in 1994 53% and 64% of boys were in the top and lowest Year 12 performance bands respectively.

Literacy: In Year 3 literacy in 1999, 89.7% of girls attained the minimum national standard compared with 84.9% of boys. (MCEETYA, 2000). The Vocational School English Literacy Survey conducted in 1996 showed that boys perform less well on literacy benchmarks in primary school. In particular, girls outperformed boys in writing, reading, speaking, and listening (DETYA, 2000). Literacy for boys declined between 1975 and 1995 with 70% of boys in 1975 demonstrating mastery of reading compared with 66% in 1995. In contrast, girls' mastery of reading increased from 73% to 74% between 1975 and 1995 (Marks & Ainley, 1997).

Numeracy: Australian results from the Third International Mathematics and Science Study found no significant gender differences in maths achievement for middle primary school students (Lokan, Ford, & Greenwood, 1996). Similarly, Marks and Ainley (1997) found no marked overall change for either 14-year old boys or girls in numeracy outcomes between 1975 and 1995 (however, boys increased marginally over this time).

Retention and exclusions: More females complete school and have done so since 1976. In 1999, 78.5% of females completed school compared with 66.4% of males (DETYA, 2000; Horne, 2000). According to Marks and Fleming (1999), the ratio of early school leaving is 3:2 (males: females), although it needs to be noted that many boys leave school to take apprenticeships and when controlling for this factor, the gender gap in early school leaving is smaller. Nationally, there are higher suspension rates for students between 13 and 15 years (44% of all suspensions) with markedly higher rates of suspension for boys (Ainley & Lonsdale, 2000).

Science and maths: In a meta-analysis of gender effects in science, boys were found to have a more positive attitude than girls towards science across all science areas.
However, although there were more positive attitudes by boys in general level science, girls’ attitudes were more positive in high-performance level science. Moreover, the correlation between attitudes towards science and achievement in science is higher for girls (Weinburgh, 1995). Later in students’ lives, within 15 fields of study in higher education classified as maths- and science-related, nine had higher male enrolments, four had higher female enrolments, and two had equal numbers of males and females (Graduate Statistics, 1999). According to Forgasz and Leder, “in contemporary Australia, despite females’ readiness to stay at school longer and to gain entry into tertiary studies in higher numbers than males, participation rates in mathematics and science-related courses are higher for males” (2001, p. 62).

Motivation: Research has found differences between boys and girls on dimensions of motivation. For example, Martin (1998, 2001b; see also Garvin & Martin, 1999) has found that boys are significantly lower than girls in persistence, self-regulation, cognitive engagement, mastery orientation, and planning and management. In other domains, however, Martin has found that boys are higher in self-concept in some academic domains (Martin & Debus, 1998), lower in anxiety (Martin, 2001b), and have more adaptive academic and social coping skills in some domains (Garvin & Martin, 1999).

Attitudes towards school: Boys are more negative about school, see homework as less useful, are less likely to ask for help, and are more reluctant to do extra work. Moreover, teachers believe that boys are less able to concentrate, are less determined to solve difficult problems, and are less productive (MacDonald, Saunders, & Benfield, 1999; see also Rowe, 1997; Rowe & Rowe, 1999).

ADHD: In a meta-analysis of gender differences in ADHD, boys were found to be significantly higher in hyperactivity, inattention, other externalising behaviour, and peer aggression (Gaub & Carlson, 1997; see also Rowe & Rowe, 1999).

SES and achievement: Although it is widely recognised that the achievement of boys is lower than that of girls, more fine-grained analysis reveals that this is the case to a greater extent for some boys more than others. Teese (1995), for example, found that low SES and NESB boys were over-represented at the lower end of the achievement spectrum.
SES and literacy: The gender gap for literacy is greater for low SES students. Low SES boys are more likely to leave before Year 12 with rural and remote males also less likely to complete Year 12 (Marks & Ainley, 1997).

SES and school completion: Ainley (1998) found that 88.6% boys from professional backgrounds complete school compared with 59.2% of boys from unskilled backgrounds. The corresponding figures for girls are 94.9% and 68.7% respectively.

ACT DATA

Many of the national level gender-related differences in educational attainment and participation are also reflected in the ACT (ACT Department of Education and Community Services, 2001), with boys under-performing in a number of areas but also achieving some positive educational outcomes in one or two other areas.

In the ACT Assessment Program in Years 3, 5, 7, and 9, females outperformed males in all literacy strands – with particular advantage in the writing strand (however, boys’ literacy improved between 1999 and 2000).

In the ACT Assessment Program males are either equal to or slightly outperform females in numeracy.

Reading Recovery typically has two-thirds representation by boys. Significantly, however, it is reported that 90% of students in Reading Recovery achieve average reading within 20 weeks of the program.

Gender differences in literacy are greater for Indigenous students in Years 3, 5, and 9 with larger differences in Year 9 indicating that relative disadvantage for Indigenous boys may increase in later school years.

Between 1999 and 2000 in the ACT there was an increased percentage of boys and girls achieving national benchmarks in reading in Years 3 and 5, with 93.8% of boys and 95.9% of girls achieving benchmarks in Year 3 and 89.8% and 91.8% of males and females respectively achieving benchmarks in Year 5.

The ACT retention rate is reported to be 20% higher than the national figure, with a negligible gender gap relative to the rest of the country (DETYA, 2000)
In terms of exclusions from school, boys represented 85% of suspensions in ACT schools in 2000.

In terms of levels of completion disaggregated by gender, there are more girls completing higher levels of Year 12 awards, shown in Table 1.

Table 1. Gender differences in ACT Year 12 awards, 2000

<table>
<thead>
<tr>
<th>Award</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort</td>
<td>49.3%</td>
<td>50.7%</td>
</tr>
<tr>
<td>Secondary College Record</td>
<td>54.9%</td>
<td>45.1%</td>
</tr>
<tr>
<td>ACT Year 12 Certificate</td>
<td>47.8%</td>
<td>52.2%</td>
</tr>
<tr>
<td>Tertiary Entrance Statement</td>
<td>44.2%</td>
<td>55.8%</td>
</tr>
</tbody>
</table>

There are gender differences in achievement, engagement, motivation, and students' orientations to school and schoolwork. Many of these show that boys perform more poorly than girls (eg. in literacy, achievement, retention, school completion, and motivation). There are, however, areas in which boys are not underperforming girls (eg. numeracy).

MYTHS

Against this backdrop of evidence-based research into gender differences, there exist a number of assumptions and misconceptions that are not based on evidence but which carry potency and have the potential to muddy the waters of investigations into gender and educational outcomes.

Researchers (cited in parentheses below) challenge the following assumptions and misconceptions:

- Boys’ and girls’ interests are competing and boys’ programs undermine the developments in girls’ education (O’Doherty, 1994)
• Boys are mainly academically inspired through male teachers, the local sports star is a good role model for enhancing academic achievement, and fathers must be involved to enhance boys’ achievement (Ludowyke & Scanlon, 1997; Pallotta-Chiarolli, 1997; Smart, 2000)
• Boys are a homogeneous group (Gilbert, 2000)
• Boys as a group are mainly interested in being taught to be masculine, feel the need for male role models, aspire to the ‘it’s cool to be a fool’ mantle, and do not admire achieving students (Trent, 2000)
• Boys are taught too much by female teachers who have different teaching styles from male teachers (Galton, Simon, & Croll, 1980).

There are a number of assumptions and misconceptions that have the potential to muddy the waters of constructive research and debate into boys’ education. These revolve around assumptions that girls’ and boys’ interests are competing, boys comprise a homogeneous group, boys need special role models or the particular involvement of males, and boys do not have academic aspirations.

**GENDER EQUITY**

When looking at the vast body of research attesting to gender differences in educational outcomes it is tempting to weight the development and implementation of programs significantly in boys’ favour. It is unlikely, however, that such a response to gender inequity will result in a system that effectively meets the needs of all students. Indeed, the more that differences are built into the system, the more two separate systems evolve, and the more implementation difficulties arise. Moreover, inappropriate weighting of programs and strategies runs the risk of communicating messages to students that some students are valued more than others. There is, therefore, a need for the development of strategies underpinned by principles of equity.

This report strongly supports the view that boys can be addressed within a gender equity framework. The Gender Equity Taskforce outlined five strategic domains for action in Australian schools, as follows:
• Understanding the process of gender construction
• Curriculum, teaching, and learning
• Violence and school culture
• Post-school pathways
• Supporting change.

Of these, this report places particular importance on gender construction, teaching and learning, post-school pathways, and supporting change.

Understanding the construction of gender involves: (a) developing and delivering curriculum within compulsory and post-compulsory frameworks that provide opportunities for boys and girls to understand gender construction and (b) increasing knowledge, understanding, and skills of teachers, managers, and parents about gender construction.

Addressing curriculum, teaching, and learning involves: (a) expanding teaching and learning to incorporate the range of boys’ and girls’ experience, (b) enhancing academic success of all boys and girls, (c) providing girls and boys with a powerful basis for engaging in emerging areas of curriculum (eg. ICT, citizenship, enterprise education), and (d) creating teaching and learning environments for girls and boys that are gender inclusive, respectful, and wide in range of methods of assessment and reporting.

Enhancing post-school pathways involves (a) challenging conventional assumptions about gender-appropriate work through developing curriculum which explores gender-based perceptions of work and careers, (b) developing curriculum pathways which expand options for boys and girls, and (c) ensuring that vocational and entry level training and career education are constructed in ways that benefit boys and girls.

Supporting change in the school requires strategies that (a) assist change through leaders’ and managers’ commitment to gender equity, (b) extend partnerships with parents, industry, and the wider community, and (c) develop adequate data gathering and information systems to monitor the participation and achievement of boys and girls.
Improving Educational Outcomes of Boys – Interim Report

It is against this backdrop of the national gender equity framework that the present research is conducted. Within this framework, enhancing the educational outcomes of boys requires the development of strategies and frameworks that benefit all students. A prime purpose of this report is to show that this is possible and how it can be done.

Boys’ educational outcomes can be enhanced within a gender equity framework. This means that strategies enhancing boys’ educational outcomes can also be effective for girls. Four areas of action under this framework are: understanding the process of gender construction, enhancing teaching and learning, developing post-school pathways, and assisting schools and teachers to support change.

STRATEGIES AND INITIATIVES IN THE ACT

Consistent with the national gender equity framework, the ACT Department of Education and Community Services has developed action plans aimed at enhancing success for all students. Four resources of particular relevance here are the Schools Plan 2002-2004, the Gender Equity Strategy 1998-2002, and the Across Curriculum Perspective Statements, and the Student Support Action Plan document.

ACT Government Schools Plan 2002-2004

The commitments of this plan revolve around caring for students, providing challenging learning, developing local, national, and international citizens, and communicating and engaging with parents and the community. Specific actions in this plan include (but are not restricted to):

- Developing students’ critical thinking, problem solving, and lifelong learning
- Developing relevant curriculum and assessment programs
- Enhancing teacher professionalism
- Building ICT skills
- Enhancing VET and enterprise education programs to support the transition to work
- Regularly reporting student achievements to parents and linking parents with the school
Improving Educational Outcomes of Boys – Interim Report

• Developing links with the community
• Celebrating school achievements.

The Gender Equity Strategy
The Gender Equity Strategy aims to assist schools and teachers to implement strategies to address gender equity. The Strategy defines gender equity, describes the Gender Equity Framework developed at the national level, outlines the five strategic directions for schools to act and report on, provides key indicators of a gender-inclusive school, and outlines ways schools and individuals can work towards a gender-inclusive school.

Across Curriculum Perspective Statements
The Across Curriculum Perspectives Statements are centrally concerned with excellence in schooling outcomes for boys and girls. The framework for action in this plan encompasses (a) access and participation to all subject areas, learning spaces, and teacher time, (b) celebrating and valuing difference, and (c) challenging social structures. In terms of gender equity, the Statements are underpinned by the imperative that: "strategies address the educational needs of boys and girls by attending to access and participation provisions in all areas of curriculum, by valuing and celebrating the interests, contributions and aspirations of girls and women, as well as boys and men, and by challenging the structures, practices and constructions of gender that are damaging to equality of life for women and men" (ACT Department of Training and Children’s, Youth and Family Services Bureau, 1997, p. 16).

Student Support Action Plan
The central commitments of this plan are to:

• Improve literacy and numeracy
• Engage all students in learning
• Create safe and inclusive school cultures
• Establish effective pathways and transitions
• Improve inter-agency collaboration
• Establish partnerships between schools and parents, carers, business, and community.

The Department has outlined a number of key actions aimed at meeting each of these commitments that include (but are not restricted to):
• Reducing class sizes
• Enhancing the teaching of literacy and numeracy
• Appointing literacy and numeracy officers
• Enhancing professional development
• Reviewing communication links with parents and carers
• Developing flexible structures inclusive of students’ diverse needs
• Early intervention to assist students with specific needs
• Detailed transitions for students moving between educational settings
• Developing flexible learning pathways plans for Year 9 students.

Taken together, the ACT Schools Plan, Across Curriculum Perspective Statements, the Gender Equity Strategy, and the Within Reach of Us All document provide a platform for enhancing the educational outcomes of all students and are consistent with the optimistic and inclusive perspective of the present report.

MASCULINITY AND GENDER CONSTRUCTION

A consistent theme in the education of boys is the influence of gender construction on their attitudes, beliefs, and behaviours not only in the educational setting but also in other salient domains of their lives. Any treatment of boys’ education must therefore take account of the social construction of gender and its place in the classroom and school. Indeed, the Gender Equity Taskforce identified the need to understand gender construction when developing an equity framework within Australian schools.

Gender is constructed through complex sets of behaviours, personal qualities, expectations, and attitudes regarded as culturally appropriate or socially acceptable. Emerging research has identified a number of features of gender construction that are relevant to the construction of masculinity. Connell (1998) reports on five, as follows:

• There are multiple masculinities
• There are hierarchies within masculinity. For example, ‘hegemonic masculinity’ signifies a form of masculinity in a position of authority
Masculinity is actively constructed – boys and their social contexts are active in constructing an ‘appropriate’ masculinity

Masculinity is dynamic in the sense that it can change

Schools are one of the major sites of masculinity formation. They operate in two ways: (a) as an agent supporting the structures and practices of masculinity and (b) as a setting for other agents (eg. students) to construct masculinities.

Connell (1998) reports that schools operate as agents in a number of ways as follows:

- Through power relations (eg. staffing)
- Through division of labour (eg. work specialisations of men and women in relation to sciences and humanities)
- Through symbolisation (eg. areas of the curriculum implicitly or explicitly being defined as masculine or feminine)
- Through boys’ subjects (eg. explicit or implicit demarcation of subjects into those more appropriate to boys)
- Through discipline (eg. higher frequency of and harsher punishment of boys)
- Through sport (eg. celebrating and reproducing dominant codes of gender).

According to Connell (1998), students operate as agents through peers who often reinforce heterosexuality and through active construction of masculinity (eg. rule breaking).

Outside the school, boys can draw unbalanced modes of masculinity constructed through the media, sport, and popular culture that result in:

- Restrictive emotionality
- Concern with power and status
- Excessive self-reliance
- Homophobia
- Anti-authoritarian bravado
- Anti-intellectualism
In an enquiry into boys’ education in NSW, it was found that the social construction of masculinity (and femininity) is ultimately not to boys’ (or girls’) advantage because it generates an identity that is unattainable. According to O’Doherty: “the attributes, attitudes, and values that are part of society’s stereotyped images of ‘femininity’ and ‘masculinity’ are for the most part unattainable for many individuals. In seeking to meet these images both girls and boys often suppress their true natures and create barriers to their education and life opportunities” (1994, p. 4).

Ideas about gender can have marked effects on students’ behaviour. Beliefs and expectations they hold about what it means to be a boy or a girl influences how they behave, subjects they select, how much they study and attend to these subjects, and what they do after they complete (or leave) school (NSW Department of Education and Training, 2000).

Of particular relevance to findings by Teese (1995) and Marks and Ainley (1997) showing that SES interacts with gender to affect achievement is the possibility that gender construction interacts with SES to yield different impacts for boys in low versus high SES groupings. According to Jackson, “in many boys’ lives at school, there is a dynamic interaction between their social/economic worlds of failure, dependency and powerlessness and their deep investments in dominant forms of heterosexual forms of masculinities. Sensing some of the despair and pointlessness of the jobless men around them and the fragility of their own lives, they counter ‘failure’ of their lives by reaching out to alternative sources of power and status . . . and that often means buying into a culture of aggressive, heterosexual manliness which deliberately rejects school learning as an unmanly activity” (1998, p. 89).

It is important that boys understand how masculinity is socially constructed and then look at how this construction can sit ‘uncomfortably’ with success at school and in particular subject areas. According to Gilbert, boys “deserve to engage with an examination of how they learn about masculinity, in their homes and families, in their peer groups, in the cultural texts that surround them and how they then are encouraged to perform masculinity in school cultures” (1998, p. 22).
The social context within which boys and girls operate is very influential. A major way in which this context affects boys is through the construction of gender and what it means to be a boy or a girl. Amongst a number of social contexts in which gender construction takes place is the school which operates as an ‘agent’ of gender construction and also as a ‘setting’ in which gender construction occurs. It is important that boys understand how and the extent to which masculinity is socially constructed and then look at how this construction can sit uncomfortably with success at school.

PRINCIPLES FOR ASSISTING BOYS (AND ALL STUDENTS)

Before detailing specific strategies aimed at assisting student outcomes, it is first important to identify core principles that guide the formulation of these strategies and enhance the likelihood of their success when implemented.

An important first principle is the need to actively involve young people in the development and implementation of strategies. As Mclean notes: “if we attempt to introduce gender reforms without actively involving young people in all aspects of the project – from design to implementation – they will almost inevitably be seen as yet another example of adult power being exerted over young people, and be dismissed accordingly” (1997, p. 63).

Indeed, the need to involve boys (and all students) in program design and delivery is underscored by students’ cynicism of boys’ programs reported by Slade. In Slade’s large-scale interview study of 1,800 Australian boys, these students saw boys’ programs as “being devised and put into place to satisfy the interests and preferences of teachers and a small number of influential parents, or to benefit the image of the school and to extend its influence and control in their lives, rather than an expression of their genuine interest in the well-being of boys in education” (2001, p. 17).

At a school level, there are principles for action that require consideration. Professional development with all school staff should occur before implementing a strategy. It may be sensible for schools to start on a smaller scale with a clearly defined focus and process and not attempt to address all gender-relevant issues at
Improving Educational Outcomes of Boys – Interim Report

once at the outset. There is then a need for sustained implementation through broader operational structures such as school policy and procedures and active involvement of the whole school community (Ludowyke & Scanlon, 1997). Indeed, Gilbert and Gilbert (1998) found that the most successful programs dealing with boys were part of a wide ranging policy on gender equity and ensured an understanding of social construction of gender that was integrated with the curriculum.

More specific principles to guide teachers at the coalface are identified by Shores (1995). Eight principles are proposed, as follows:

- Find where boys are at
- Show them clearly where they are at
- Affirm them for where they are and then move them on
- Do not blame students for failing to learn
- Look for areas of connection or similarity with the student
- Understand how the student sees the world
- Ensure that the student always feel safe (not threatened by the material or the presenter)
- Teach consistently with the stated objectives.

A number of commentators argue that separate strategies for boys and girls should be limited. The NSW enquiry into boys’ education concluded that in terms of the problems experienced by boys, “to treat these problems separately is to misunderstand their nature: not only are they inter-related, they are also inter-related with the problems girls experience” (O’Doherty, 1994, p. 9).

It is also important to learn from the significant gains made in addressing the educational disadvantage of girls over the past three decades. There is a considerable bank of knowledge and data that can inform strategies aimed at enhancing educational outcomes of boys. According to Ludowyke and Scanlon, “the most informed sources of knowledge of effective practices of gender reform are those derived from over twenty five years experience in reducing the educational disadvantages of women and girls, and it is critical to build from within this knowledge” (1997, p. 15).

There needs to be appropriate weighting of intervention and programming. Rowe (2000, in Hawkes, 2001) has shown that the bulk (59%) of variance in student
achievement is explained by teacher and classroom variables, around one-third (35%) of variance is explained by student characteristics, and six percent is explained by school-level factors. It therefore follows that the bulk of intervention occurs first at the teacher/classroom level (with all the appropriate school-level support required to do this) and then at the student level. Indeed, in a major longitudinal analysis of productive pedagogy in Queensland, Lingard and Ladwig (2001) found that there were more differences in pedagogy between teachers than between schools – again demonstrating that the critical point of action is in the classroom with the teacher.

More detailed data analysis by Hill and Rowe (1998, in Rowe, 2000) derived the findings in Table 2:

Table 2. Variance in achievement explained by teacher/class and school.

<table>
<thead>
<tr>
<th></th>
<th>Teacher/class effect on achievement</th>
<th>School effect on achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% variance explained</td>
<td>% variance explained</td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>45.4%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>37.8%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Maths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>54.7%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>52.7%</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

According to Rowe, “the findings of large class/teacher effects and small to insignificant school effects, we suggest – are primarily a reflection in variations in teaching quality, and point to the conclusion that it is primarily through the quality of teaching that ‘effective’ schools make a difference” (2000, p. 29). Indeed, this is supported by a review of literature into boys’ achievement and motivation which found that the role of teachers was amongst the most critical in developing positive attitudes to learning in boys (MacDonald, Saunders, & Benfield, 1999). Rowe (2000) concludes that more attention needs to be directed to the centrality of pedagogy in the classroom context.
A set of core principles guides the design and development of strategies aimed at enhancing student outcomes. It is important to: involve students in the development and implementation of programs, support change with professional development of teachers, integrate strategies across the curriculum, strive for uniform (targeting boys and girls) strategies wherever possible (but recognise that targeted strategies can be appropriate), and direct significant resources to the teaching, learning, and classroom context.

TEACHING AND LEARNING IN THE CLASSROOM
Given the fact that teacher and classroom factors explain the bulk of variance in student achievement, an emphasis of the present report is on teaching and learning in the classroom. This is considered one of the most critical points of action for enhancing the outcomes of all students. The following areas (in no particular order) are identified as important to address at the classroom and teacher level: dealing with diversity, promoting active learning, developing higher order thinking, creating effective learning zones, promoting success, providing effective feedback to students, recognising and creating learning windows, developing good relationships, engaging in productive pedagogy, and listening to students.

Dealing with diversity
The student body is becoming increasingly heterogeneous. Differences between students in terms of SES, ethnicity, learning styles, ability, and motivation, to name a few, require educators to develop pedagogy that can accommodate these differences. Increasingly, teachers who can teach to diverse audiences are in a stronger position to enhance the educational outcomes of all students.

At a broad level, various researchers have identified gender differences in learning styles. For example, Ludowyke and Scanlon (1997) suggest that boys perform better on tasks and assessment that are:

- Shorter
- Closed
• Focused on single concepts at a time
• Task and action based
• Experiential
• Information dense.

In contrast, they argue that boys have more difficulty on tasks and assessment that are:

• Extended
• Open-ended
• Multi-concept
• Reflective
• Text based
• Interpersonal.

This report proposes that these preferences will also vary from boy to boy as well as amongst girls. Given this, it is considered important that diverse modes of learning are accommodated in the classroom. The reality is that the need for lifelong learning and an ability to adapt to the changing world of work requires that all students be exposed to diverse modes of learning. As Hawkes reports, “there are clear educational imperatives to use short answer responses, just as there are clear educational imperatives to use longer answers. It is entirely possible to increase the number of short answer tasks, ‘closed’ tasks, and analytical tasks . . . without compromising the integrity of the learning experience” (2001, p. 111).

This need to effectively deal with diversity brings into consideration other techniques, including:

• Specific profiling of students with early intervention for skill deficits
• Balance of individual, group, cooperative, and competitive activities
• Balance between open-, reflective-, language-centred and closed-, process-, action-centred learning
• Range of assessment methods
• Range of personal and public strategies to acknowledge and validate achievement (Ludowyke & Scanlon, 1997).
Selection of specific activities that draw on these principles is best left to the teacher who knows the students, what they are capable of, and what will engage them. One way to mix modes of learning is to restructure tasks to transform them from something that the student may find difficult to something that they can manage effectively. For example, the common claim that boys have difficulty with open tasks and prefer closed tasks can be challenged by transforming open tasks into closed ones through ‘chunking’. Here, the student carries out the larger task through a series of manageable, definable, and near-discrete smaller tasks. Indeed, “the discerning teacher is often able to disguise an open-ended task by turning it into a series of closed tasks” (Hawkes, 2001, p. 90).

Promoting active learning

There is support in the research and school community for the view that active learning suits boys best. Active learning has merits – it engages quickly, is energising, and can sustain attention. For these reasons, it can benefit all students. Some useful strategies that are action-oriented include:

- The ‘Take 5’ approach – beginning a lesson by asking students to list five things learned from the previous lesson and then comparing the list with the next student
- Ending a lesson with an activity that sums up a key learning idea – for example, telling a partner the most important thing learned from the lesson
- Learning through debates, role plays, and research projects
- Visual construction of concepts – for example, mind maps, spidergrams
- Asking students for input into their assessment tasks and criteria (Noble & Bradford, 2000; West, 2001).

Active learning also requires the student to act on content delivered in class or through other mediums. Research shows that acting on information leads to better recall because it requires the individual to understand that information first (Fitz-Gibbon, 1996). Transforming a chapter into a spidergram is one example of students acting on information they have received. Other examples are summaries in students’ own words and notes in text margins.

Cognitive research on memory and attention also provides insight into active teaching and learning. Research into the primacy effect shows that students learn best in the first part of a lesson (Lazear, 1994). This holds two implications for teaching. First, it is
critical not to lose valuable time at the start of a lesson on tasks that are not central to the lesson objectives. Too often tasks such as housekeeping (role call, handing back assignments) absorb the most critical part of the lesson. Second, it is important for the lesson to be ‘reinvented’ every twenty minutes or so to simulate conditions needed for taking maximum advantage of the primacy effect (Hawkes, 2001).

Developing higher order thinking
A common criticism of boys is that school and learning within it lack relevance and are not useful in their lives. Often this happens at times when there is an imbalance between content and skills with excessive content being seen by boys to be unrelated to their lives and not enough emphasis on skills. The role of schools is not simply to impart content but to develop students who can solve problems, make decisions, and adapt to an ever-changing world of work and relationships. These all require students to develop higher order thinking skills. Sousa (1995) has conceptualised a continuum along which thinking skills can be mapped. Figure 1 shows details.

Figure 1. Continuum of thinking skills

At a practical level, there are many ways to stimulate higher order thinking. Use of questions in the classroom is one effective method. Hawkes (2001) suggests that the
following types of questions used strategically in the lesson can stimulate higher order thinking:

- What would you have done?
- Can we trust the source of this material?
- What do you think caused this?
- What other ways can this be done?

**Creating effective learning zones**

If there are 25 students in the classroom, there are at least 25 learning zones. A student’s learning zone is his/her desk and the three students around him/her. Students tend to choose learning zones that are comfortable. Comfortable zones are those with which the student identifies or has some affinity. Underachievers, for example, can choose learning zones with other underachievers and “these will naturally support each other’s lack of effort, initiate each other into the anti-swot club and be unchallenged by any competing values – save that of the teacher” (Noble & Bradford, 2000, p. 95).

Seating can be used to promote more adaptive learning zones. Against a backdrop of a supportive and non-threatening learning environment a verbally confident student can be paired with a reflective student, a student strong in maths can be paired with a student less confident in maths, and a student who presents work well can be paired with a student who is not so careful or creative with presentation. Having said this, there are four key rules to observe when developing seating policy. First, it must be emphasised to students at the outset that the policy is designed to enhance learning (not to manage the class, or separate friends etc.). Second, seating must be arranged in the context of a supportive classroom that is not excessively competitive. Third, seating arrangements must be very flexible and changed if they do not work. Fourth, excessively incongruent pairings must not be made (eg. do not pair the wild boy with the reflective girl). Ultimately, teachers are the best judges as to whether seating policy is appropriate and if so, which pairings to pursue.

**Promoting success**

All students enjoy and thrive on success. Success is one of the most motivating outcomes a student can experience. There are many ways to enhance success experiences in the classroom (see Martin, 2001b, in press). Here the focus will be on two. Both revolve around the central notion that the most potent source of self-belief
and which lays the soundest foundations for its sustainability is real experience of success. To provide every student with an opportunity to experience real success requires two things.

First, educators and students must learn how to break tasks into components and see each component as an opportunity for success – referred to as ‘chunking’ (Hawkes, 2001; McInerney, 2000; Noble & Bradford, 2000). This not only provides ongoing motivation to complete the task but also increases opportunities for success. That is, rather than the outcome being the only indicant of success – yielding a zero-sum game in which a student either succeeds or does not – the student has multiple opportunities to succeed. In terms of the lesson, this would reflect the need for lessons to be ‘chunked’ into distinct tasks with regular milestones to meet. In doing so, “the horizon is shortened and the work becomes manageable” (Noble & Bradford, 2000, p. 28). Importantly, delivering lessons in this way is not inimical to the success of girls.

A second way to provide every student with the opportunity to experience real success is to have students expand (or even rework) their definitions of success. Definitions of success that make success accessible to every student cast success in terms of personal bests, skill development, and improvement. This is in stark contrast to the very limited and relatively inaccessible definition that many students hold of success that is cast in terms of topping the class, beating others, and being the smartest (Martin, 1998, 2001b, in review a; Martin & Debus, 1998; Martin, Marsh & Debus, 2001a, 2001b, in press). When students see success in more personal terms rather than relative terms, success immediately becomes accessible to them. Importantly, defining success in this way and academic achievement are not mutually exclusive.

McInerney (2000) has identified nine core steps for teachers in promoting success in students’ work, as follows:

- Begin lesson with quick review of previous learning and outline goals
- Present material in small steps and allow application after each step
- Provide clear and detailed instructions and explanations
- Ask a large number of questions and check for student understanding
- Guide students in initial phases of learning and application
- Provide systematic feedback that is task-based (not performance-based)
• Monitor students as they work
• Provide ample time for completing tasks
• Identify in advance what material/concepts might be difficult.

To promote success in the classroom, Ludowyke and Scanlon (1997) recommend that greater clarity be injected into the classroom and classroom tasks. This involves showing students examples of quality work in their complete form and providing very clear and detailed instructions to students regarding the quality and quantity of work expected.

Providing effective feedback to students

The feedback given to students on their work and assessment tasks is very important. So important is the role of feedback that it can determine whether students are success orientated (motivated to strive for personal bests), failure avoidant, or failure accepting. According to Noble and Bradford, “unfortunately [feedback] has often played the role of confirming students’ more negative suspicions about their abilities . . . the general rule should be that students need to be moved from where they are, not bogged down by repeated failure” (2000, p. 103). Feedback to students is enhanced through:

• Very clear expectations when the assignment or test is administered
• Very clear marking criteria
• Greater focus on content and skill than presentation
• Showing students previously completed examples of good work – eg. assign homework that asks students to review this quality work (“find five good things about this essay”).

According to Hawkes (2001), report cards are an important opportunity for teachers to launch students into future learning. Reports should not solely be a snapshot of past performance. They should also focus on recommendations for further improvement. Reports should also address the ‘so what?’ question – why it is important to learn given material in a particular subject and how the student will benefit from further improvement.

Recognising and creating learning windows

“There are opportunities which emerge when the heavenly constellations are such that an appropriate tide is formed that allows a voyage of learning to be possible.
These are magical moments, not to be missed. It is not often in the natural order of things that one finds constructive alignment, a boy, a momentary sense of interest, and someone who can develop that interest” (Hawkes, 2001, p. 89).

There are particular times in a lesson or moments in class or at school or on excursion that are more conducive to engagement and learning than others. These are referred to as ‘learning windows’ (Hawkes, 2001). Learning windows are opportunities where students are fully attentive, interested in learning, and ready to learn. These moments pass and before they pass effective teachers do not miss the opportunity to seize them, expand on them, and explore them to the student’s maximum advantage.

The more teachers are able to recognise and seize learning windows the more students are hooked into the lesson or learning activity. Once the ability to recognise learning windows is developed, the teacher is then in a strong position to create learning windows – this is when teaching and learning becomes truly exciting.

**Developing good relationships**

“Teachers who are able to effectively relate to students, accept student individuality, and teach in an inclusive and democratic environment are more effective as teachers of young adults” (ACT Department of Education and Community Services, 2001, p. 10).

A central theme around which this report revolves is that the student-teacher relationship is one of the most critical factors influencing students’ engagement, behaviour, and achievement at school, a theme consistent with national projects carried out in recent years (eg. Successful Interventions Project by DETYA).

Slade (2001) found that boys (explicitly or implicitly) were primarily interested in relationships. In the context of strategies and initiatives revolving around policy, programs, guidelines, and accountability, boys “emphasize people (through personalities) and the importance of establishing and maintaining relationships of trust and respect” (p. 18).

Connell (1998) suggests that good human relationships are critical when targeting constructions of masculinity. Students need to develop a critical understanding of their own culture with an appreciation of other people’s and communities’
experiences. To do this, he emphasises the need for good human relationships. Good human relationships, according to Connell, are built through developing students’ communication skills, conflict resolution skills, and gender awareness.

A safe environment in which students are not fearful of making mistakes is an important foundation for developing good relationships with teachers. Making mistakes is humanising and breaks down barriers between student and teacher. It is critical for the teacher and the student to feel safe to make mistakes. A safe environment in which mistakes can be made and learnt from significantly reduces students’ fear of failure. When students do not fear failure they are prepared to ‘have a go’, persist in the face of challenge, and are less likely to engage in self-protective behaviour that can be inimical to success (Martin, 2001b; Martin & Marsh, in press; Martin et al, 2001b).

**Developing productive pedagogy**

Research has identified some core characteristics of teachers that enhance student engagement and learning. In the most recent comprehensive analysis of teaching, Lingard and Ladwig (2001) identified the essential characteristics of productive pedagogy – teaching that brings out the best in students. Teachers high in productive pedagogy:

- Viewed all students as capable of learning
- Saw themselves as facilitators of learning
- Saw student learning very much as a teacher’s responsibility
- Focused on skill development more than transmitting content
- Worked more innovatively with curriculum to create learning windows
- Had higher extra-curricular involvement
- Engaged in professional conversations with colleagues
- Were willing to talk about their failings and made changes to respond to these.

In contrast, teachers low in productive pedagogy:

- Saw students as solely responsible for their own learning
- Believed that factors outside teachers’ control determined student outcomes
- Aimed instruction at the middle level and accepted that some students could not learn
- Focused on content more than skills
• Were guarded about their work and tended not to recognise their shortcomings.

Lingard and Ladwig (2001) argue that schools should give much greater emphasis to leadership in pedagogy – not simply leadership in management. Indeed, they found that teachers are very receptive to talking about and developing pedagogy in the school: “There was a sense of relief that the system might be shifting from emphasis on structural change, narrow performance measures, and limited external accountability requirements to the core business of high quality teaching and learning in schools” (Lingard & Ladwig, 2001, p. 15).

Of particular relevance to the teaching community and the classroom, three areas were identified by Lingard and Ladwig (2001) as requiring action. The first relates to increasing productive pedagogy through challenging work and social support. They found that intellectual demand and social support were linked significantly with improved student outcomes. The second relates to enhancing productive assessment. They found that teachers often set assessment that was low in demand, disconnected from the world and intellectually unchallenging. Instead, assessment must capture varied skills, be challenging, and be perceived as relevant. The third relates to professional development that needs to revolve around productive pedagogy, how to use assessment, and how to teach and set appropriate work for students.

**Incorporating boys’ perspectives**

Increasingly, researchers are building into their recommendations the need for educators to take account of the perspectives of boys (and all students) when developing programs and pedagogy. Researchers are agreed that it is critical to have ‘boys on side’ if strategies aimed at enhancing their educational outcomes are to be successful.

Slade (2001) interviewed a large sample of secondary school boys. They valued school primarily for the social life and saw that school is about gaining credentials more than learning something they can use in life. They believed that work in middle school is boring, repetitive, and irrelevant. They saw the transition between Years 10 and 11 as an enormous one with Year 11 seen as extremely difficult. They also believed that girls got a better deal from teachers with more positive attention, better
marks for similar work, more help, and more freedom and respect. Significantly, most boys saw low achievement as due to “bad teachers”.

Slade went on to discuss boys’ views on good teachers: “A uniformly repeated view is that a ‘good teacher’ can make a bad lot tolerable and make achievement both desirable and possible” (2001, p. 14). Boys’ views on the features of good teachers are that such teachers:

- Listen
- Respect them
- Are relaxed, enjoy the day, and can laugh at their own mistakes
- Are flexible, adjusting rules and expectations to meet the needs of individuals and their circumstances
- Explain work carefully and make it interesting
- Do not humiliate them in front of the class
- Show no favouritism
- Give them a chance to make mistakes and learn from them
- Affirm all students.

It is important that any critiques of gender and masculinity in the classroom are interesting and relevant to boys. For this reason, then, it is also important to know and understand their views. An analysis of gender construction with boys must also make clear how it will benefit their lives and the way they view themselves. According to Gilbert and Gilbert, “we will need to be able to present a critique of masculinity in terms which will not only interest boys, but which will also appeal to their social commitments and their sense of personal welfare . . . this commitment will be most effective if it is incorporated into their sense of who they are, and if they can see how it might be applied in a way that makes their lives more rewarding” (1998, p. 247).
The teacher and class levels are considered amongst the most critical points at which student outcomes can be improved. Important ways to enhance outcomes through teacher- and classroom-level action involve assisting teachers in: dealing with diversity, promoting active learning, developing students’ higher order thinking, creating effective learning zones, promoting success, providing effective feedback to students, recognising and creating learning windows, developing good relationships, engaging in productive pedagogy, and listening to students and incorporating their perspectives into teaching and learning.

SCHOOL-LEVEL ACTION

Although teacher- and class-level factors account for most of the variance in students’ achievement, school-level activity and policy have a great bearing on what happens in the classroom. School-level factors involve issues surrounding the nature of gender construction, gender equity, staffing structure and mix, school culture, school effectiveness, whole-school student input, and pedagogical leadership.

Gender construction and gender equity

Browne (1995) identifies school-level aspects of gender construction as being influential in the achievement and ambitions of students. These involve school-wide action addressing dimensions of homophobia, bullying, violence, and a ‘cool to be a fool’ culture. It also involves using power in schools in a way that students learn to see that issues and conflict can be resolved in respectful ways.

Two critical means of engaging a whole-school approach to gender equity and appropriate gender construction is (a) having school leadership affirm gender equity principles and (b) modelling gender equity principles in relationships between staff and between staff and students (Martinez, 1994). According to Collins, Batton, Ainley, and Getty, a whole school approach to gender equity requires “systematic, whole-school work, requiring focused attention and team work by staff while a system is being set up, and mindful professional judgement thereafter” (1996, p. 173).
At a school level, gender-relevant programs are important and Connell is careful to separate these from gender-specific programs – a more prevalent approach such as the development of boys’ programs. Gender-relevant programs involve boys and girls through a gender-inclusive (not gender neutral, which avoids any gender distinctions) curriculum: “Given the multiplicity of masculinities, a gender-inclusive curriculum means taking the standpoint of other masculinities, as well as other femininities” (Connell, 1998, p. 225). Understanding the construction of gender and challenging dominant forms of masculinity also requires schools to challenge gender stereotypes across the curriculum and to also encourage wider choice of subjects by boys (Browne, 1995).

School culture and school effectiveness
A problem in some schools is the development of anti-swot cultures. These predominantly operate amongst (but are not restricted to) boys. Strategies for combating an anti-swot culture include:

- Zero-tolerance of anti-swot attitudes or behaviours (eg. clear policy on anti-swot remarks in class)
- Teachers showing students that they themselves are learning on an ongoing basis through reading, conferences, and professional development
- The school promoting itself to students, parents, and the community as a learning organisation
- Pro-learning awareness-raising resources (eg. leaflets, flyers, posters) developed by the students themselves
- Conference organised and run by the students to develop ways to challenge the school’s anti-swot culture (Noble & Bradford, 2000).

In the past few years, there has been an emerging body of research identifying features of effective schools and school cultures. Australian research has identified elements of effective schools that enhance students’ engagement with and achievement at school (Hill & Rowe, 1996). These include:

- A focus on learning
- Purposeful teaching
- Monitoring of individual students’ progress
- Active involvement of students
• Use of a variety of teaching methods
• Role modelling.

Overseas, elements of effective schools have also been identified as follows:

• A strong learning culture
• High expectations of students and teachers
• A shared vision for the whole school community
• Teamwork amongst staff and students
• Recognition of the rights and responsibilities of students (Mortimore & Mortimore, 1999).

Student input and student recognition
Input by students at the whole-school level is considered important (Browne, 1995). Students are able to provide valuable input into school policy (e.g., discipline, uniform, mission etc.). Some schools conduct surveys of students on a variety of issues relevant to school policy and procedures.

There also needs to be whole-school recognition and celebration of academic development, skill and knowledge building, and personal academic bests. This must include not only students who excel in exams and assignments but also those who make significant improvements and reach personal bests.

In addition to end-of-term marks, students may also receive an improvement or development index that becomes just as highly regarded and valued as the marks themselves. This index must be standardised so that all students know exactly what a score tells them. Thus, in report cards students would receive two scores for a given subject, each equally diagnostic and informative and each equally valued.

School staffing
In a review of boys’ education in NSW, O’Doherty (1994) recommended that a senior gender education staff member be appointed in the Department, a school executive be responsible for implementing gender equity principles within the school, and each co-educational school appoint a boys program coordinator and a girls program coordinator. It was also noted that too often the school staffing structure reflects the gender inequities in the wider community and that more senior representation of
female teachers needs to take place where possible. In support of this view, the Australian Secondary Principals’ Association reported, “men tend to be clustered into roles that emphasize authority and discipline whilst women predominate in areas of nurturance and support. Schools are often giving boys and girls mixed messages about appropriate gender attitudes and behaviour” (2001, p. 12).

One criticism of equal opportunity in the past is that it has dichotomised the world of gender and operated on the basis of simplified polarities of female and male roles (Jackson, 1998). According to Kenway, equal opportunity has not been “sufficiently nuanced to be read as meaningful in the context of people’s experience” (1995, p. 77). As a result, boys and girls have not been able to assimilate this model into the reality of the multiple masculinities, femininities, and their overlap in their own lives. In response to this, Jackson argues that there is a need for a gender equity model “that can speak directly and recognizably to both girls’ and boys’ messy, awkward, lived experiences . . . moving it from the confusing, dichotomised world of gender absolutism towards a world where more of us can personally engage in its dynamically changing, contradictory relations” (1998, p. 91-92).

**Pedagogical leadership**

Lingard and Ladwig (2001) argue that within schools there is not enough emphasis on pedagogical leadership or a focus on developing a learning climate across the whole school. They suggest that pedagogical leadership needs to be promoted in schools so that the school sees pedagogical leadership as contributing a vital role in the school’s enhancement, as does managerial leadership. On this matter, Lingard and Ladwig conclude, “without sufficient financial and emotional reinvestment in teacher professionalism, in the development of a learning community, and in improved classroom practices of pedagogy and assessment, a managerial approach does not generate improved student outcomes. A codifying of school managers and leaders is necessary for them to be focused directly on pedagogic leadership across a school” (2001, p. 18).
Research shows that school-level action can strongly support teacher- and class-level action in enhancing educational outcomes of all students. Students can benefit from schools effectively modelling principles of gender equity, addressing an anti-academic culture, building a proactive and optimistic school culture, valuing student input into school policy and procedures, celebrating academic excellence, personal bests, and improvement, developing a staffing structure and mix that sends appropriate messages to students, and developing school-wide pedagogical leadership roles to support strategies in the classroom.

**LINKING SCHOOLS WITH THE ‘OUTSIDE WORLD’**

In dealing with the issue of effective schools, it is apparent that schools that link students with the world beyond the classroom walls more effectively position their students for transition to further education and training or stable full-time employment. Such initiatives involve a number of elements including workplace learning, vocational education and training, school-industry links, and community based learning. Effective schools also have positive links with students’ parents/carers.

**VET in schools**

Effective vocational education and training (VET) programs engage students and assist their transition into further education and training or the labour market. One criticism by boys about their education is that school lacks relevance and meaning in their lives. This reduces their valuing of school and Martin (2001b, in press) has shown that students who do not value school are less engaged and achieve at significantly lower levels.

Recent research has shown that a key means to enhance relevance for many boys is to introduce more vocational education (without compromising the academic curriculum for boys who prefer the academic curriculum) and provide clearer pathways and bridges to further education, training, and employment. The House of Representatives Standing Committee on Employment, Education and Training Committee (1997) found that introducing vocational education to at-risk students early in secondary school had the effect of increasing their willingness to stay at school, increasing their self-esteem, and led to full-time employment after completing school.
Consensus in the research literature on VET and its functions is that:

- Many young people would benefit from a broadening of the school curriculum to include more vocational education
- There is a need for high quality coordination of all VET stakeholders
- Close links with local industry are important
- VET needs to be delivered effectively and in consultation with industry
- VET needs to be extended to junior secondary school
- The status of VET in schools needs to be improved (Keys Young, 2000).

Vocational education and training, then, is an important activity schools can implement (or refine and progress) to not only extend all boys’ educational experience but to act as an intervention for at-risk boys. Indeed, VET in school is an opportunity to cater for diverse groups of students (Polesel, Teese, O’Brien, & Unger, 1999).

Facilitating conditions for successful VET are that it:

- Is conducted by staff who receive appropriate training or professional development
- Occurs early in students’ high school years (at least in middle school)
- Links students’ interests and abilities to particular career pathways
- Links directly, where possible, with the wider curriculum
- Encourages students to reflect and think more about the experience and knowledge gained and how the relevant skills can be applied to other areas
- Occurs over longer rather than shorter duration throughout students’ high school years (Byrne & Beavers, 1993; Evans & Poole, 1992; House of Representatives Standing Committee on Employment, Education and Training Committee, 1997).

It is important to ensure that VET in schools is not at the expense of core education and school activities but to also ensure that VET is not positioned in a way that is seen as tokenistic. Rather, it needs to be positioned to add value to young people’s education and also improve the quality of young job candidates. It is also important to recognise at a whole-school level that VET is not a form of streaming – perpetuating the inequities that exist outside the school. Rather, it needs to be promoted and
implemented as a choice for positive engagement that leads somewhere rather than as a means to opt out of the academic curriculum (Keys Young, 2000).

**Workplace learning and school-industry links**

Successful workplace learning by schools has been found to depend on a number of factors (Cumming & Carbines, 1997, in House of Representatives Standing Committee on Employment, Education and Training Committee, 1997), including:

- School leadership
- Dedicated teachers
- A dedicated coordinator
- Effective school-industry links
- Equal acceptance of general and vocational education
- Parent and community support
- Networking with other schools’ expertise.

Of these factors, dedication of the teachers and a coordinator is particularly important. School effectiveness is underpinned by its teachers (Rowe, 2000) and this is particularly the case in relation to workplace learning in schools (Keys Young, 2000).

Malley, Frigo, and Robinson (1999) identified a number of features of successful school-industry programs through their in-depth case studies of 16 schools undertaking school-industry programs. Their findings were that successful links were derived through:

- Schools responding well to change, often a result of a visionary staff member who went beyond what was comfortable and conventional to embrace what was new and challenging
- Effective leadership in which a critical person initiated and maintained structured workplace learning
- Schools recognising that a general education incorporating workplace learning worked well
- Schools delivering a high level of service to both students and employers
- Good program management. This involved a variety of measures ranging from built-in provisions to help students stay abreast in their academic work to sharing the costs of running and coordinating the workplace learning with other schools.
What also emerged from their research was that although a number of critical features underpinning effective school-industry links could be identified, there was no one best model. Rather, schools effectively responded to and managed change and challenge in different ways.

**Community-based learning**
When senior school students receive vocational-based instruction, there is also a place for junior or middle school students to begin to gain skills in activities outside the school. Community-based learning (CBL) is one such approach aiming to improve student learning and achievement through community and social development (Cumming, 1998, 1999). A number of principles of successful practice for CBL have been identified (Cumming, 1999). These involve:

- Engaging students and other stakeholders through
  - encouraging them to take responsibility for the program and outcomes
  - fostering collaboration
  - ensuring ample preparation of stakeholders for the program

- Establishing collaborative leadership through
  - a future orientation and a focus on shaping the future
  - collective action and management
  - acting as advocates (eg. by embracing the media)

- Reflecting on structured learning experiences through
  - encouraging reflection on the purpose of the activities
  - encouraging reflection using a variety of approaches (eg. writing, talking, performing)
  - reflecting on a regular and continuous basis.

**Parents/carers and home**
Students’ parents/carers and their home environment are repeatedly raised as factors that have a significant influence on educational outcomes including achievement, engagement, motivation, retention and completion, and literacy and numeracy. Recommendations around this issue are underpinned by the need to involve parents/carers as active participants in their children’s education (O’Doherty, 1994).
Although literacy is addressed in more detail below, the significant role of parents/carers in this area is noted here. Research shows that literacy is the area with the potential for one of the greatest yields as a result of parent/carer participation. When parents/carers read to their children at a young age, read themselves, and discuss with their children what they are reading, students have more positive attitudes towards reading and receive higher teacher ratings on reading measures (Rowe, 1991).

The school can play a role in promoting a reading environment at home. For example, two ways to do this are sending booklists home at Christmas time for parents/carers to buy their children and being clear to parents/carers about how reading to their children and reading themselves assists their children (Millard, 1997). Importantly, however, schools need to be sensitive to parents/carers with low literacy and perhaps offer an informal program to assist them (Noble & Bradford, 2000).

Take-home reading schemes can be another means of linking the school and home with a view to enhancing students’ literacy. These schemes involve:

- Establishing the student’s reading age
- Selecting books with the student’s help
- Grading books and placing each grade in a separate box
- Inviting students to select a book from the appropriate box
- Developing a contract with parents/carers that the student will read for, say, 30 minutes each night
- Keeping a borrowing record that the teacher monitors
- Injecting appropriate feedback and rewards for boys’ and parents’/carers’ participation (Hawkes, 2001).

Students value school more and see its relevance to them and to the world more generally when school and what they learn are seen in the context of other processes, agents, and systems outside the school. School and school learning can be contextualised in this way through VET, workplace learning, effective school-industry links, community-based learning, and links with parents/carers and the community.
STUDENT-LEVEL ACTION

Various student-level strategies are effective in enhancing educational outcomes of boys. Perhaps one of the most critical student-level variable is motivation – this is treated separately in Part 2 of this report. The present section considers other programs that develop cross-age tutoring, support peer mentoring, and tackle negative peer group influence.

Mentoring

Mentoring harnesses boys’ tendency to respect and admire older students. According to MacCallum and Beltman (2000), mentoring is centrally concerned with three central messages: (a) “I am here for you”, (b) “I believe in you”, and (c) “I will do my best to help you achieve”. A number of mentoring strategies have been recommended by West (2001; see also Noble & Bradford, 2000). These include:

- Paired writing sessions
- Secondary school students adopting primary school students (eg. older boys listen to younger boys read)
- Primary school activity days (eg. secondary students teach some useful skills for doing better in primary school)
- Former students visiting the school (eg. to encourage reading, or to show post-school pathways following academic engagement)
- Underachievers choosing a teacher mentor to talk to
- Year 12 boys mentoring younger underachievers
- Industrial pairings through partnerships with local businesses.

If mentoring is to be considered, there are some important issues to resolve before instigating the program. First, there needs to be very clear guidelines and parameters set for the mentoring relationship. Second, mentors and target students need to be paired very carefully – if the pairing is not to students’ academic advantage it is best not to pair them at all. Third, legal duty of care issues must be resolved at the outset as well as thorough checks of mentors’ backgrounds if industry or community pairings are to take place. Fourth, mentoring should not promote unrealistic expectations or initiate disadvantageous pairings that lead to one more failure for students who may already have a history of failure. Fifth, mentoring within the school must not be seen solely as social time (although there can be a strategic social support role). Finally,
the school at all levels must explicitly value the mentor program if it is put into action (MacCallum & Beltman, 2000; Noble & Bradford, 2000).

**Role models**

There are many male and female role models in the community that can demonstrate diverse modes of masculinity and femininity and who can also be show-cased as learners (some of whom may have struggled at school) and for whom learning has yielded diverse and positive outcomes. There are, of course, role models within the school also – students and staff. For example, celebrating older students as learners has the effect of academic modelling and also enhancing older students’ self-esteem and motivation. As with mentoring, careful selection of role models is needed. For example, if selecting sports stars (one popular choice of role models) care needs to be taken to ensure that their academic pathways had significant yields for them or that they are utilised as an academic support (eg. listening to students read).

**Goal and target setting**

Goal setting has been found to enhance persistence, problem solving, and motivation. Goal setting is quite simple to teach students and there are many goal setting strategies. Noble and Bradford (2000) identify the SMART system of goal setting. This involves setting goals and targets that are:

- S – Specific
- M – Measurable
- A – Achievable
- R – Realistic
- T – Time-limited

They report that too often students’ targets and goals are ‘sloppy’ or ‘soft’ and that it is important to refine their targets to SMART ones. Table 3 demonstrates:
Table 3. Sloppy, soft, and SMART targets

<table>
<thead>
<tr>
<th>Sloppy target</th>
<th>Soft target</th>
<th>SMART target</th>
</tr>
</thead>
<tbody>
<tr>
<td>I must improve my English</td>
<td>I must improve my spelling</td>
<td>I will learn six spelling words each week and test myself on them at home on Tuesdays and Thursdays for the next two months</td>
</tr>
<tr>
<td>I must be better behaved</td>
<td>I must improve my behaviour in History and French</td>
<td>I will sit away from Andy in History and Jo in French; I will not talk while the teacher is talking</td>
</tr>
<tr>
<td>I must do better in Science</td>
<td>I must improve my practical work in Science</td>
<td>I will carefully plan and prepare for each practical; I will ask questions if I’m unsure what to do; I will write up the practical on the same day that I do it</td>
</tr>
</tbody>
</table>

**Peers**

The peer group can affect gender construction, anti-swot perspectives, and school culture (Power, Whitty, Edwards, & Wigfall, 1997). According to Martin (2001a), there are three levels at which peer pressure is addressed: the individual student level, the inter-student relationship level, and the class level.

At the individual student level it is important to develop areas for self-esteem enhancement in the student’s academic life. This involves maximising opportunities for success in schoolwork. This can be achieved by breaking tasks into smaller components that increase opportunities for success – so even if the final answer is not correct, the student experiences some success along the way. Building opportunities for success also entails reworking students’ notions of success from ones that typically involve being the best or the top of the class to ones where success is seen in terms of personal bests, improvement, and skill development. When students experience real success in these ways – they are more likely to define their self-worth in sound motivational terms rather than in terms of anti-academic peer acceptance.
The second way to deal with peer pressure is to develop more proactive and success-oriented relationships amongst students. An effective means of doing this is to develop cross-age tutoring/mentoring where younger students come to aspire to engagement and personal improvement rather than under-achievement. As discussed above, however, pairing of students with mentors must be carried out carefully.

The third way to deal with peer pressure is at the class level. For the most part, this involves developing social and cooperative classroom goals as well as an environment in which skill building and personal bests are valued. There are many techniques to build social and cooperative goals – group work and cooperative learning are two popular ones (see Killen, 1998 for effective strategies to do this). These build an atmosphere of inclusion, engagement, and involvement and sow the seeds for a new peer group – one that is conducive to learning and achievement. This contrasts with classrooms where students are disaffected and which sow the seeds for identification with deviant or anti-academic peers.

This report has outlined a number of other ways to address negative peer influences as they pertain to educational outcomes. These include:

- Careful consideration of learning zones in the classroom
- Whole-school approaches to creating learning environments and challenging anti-swot cultures
- Whole-school approaches to addressing gender construction
- Paying particular attention to students at times of transition.
There are student-level strategies that enhance students’ educational outcomes and also enhance the culture of the school as a whole. Mentoring and role models provide an opportunity for students to develop confidence, good relationships, and optimistic academic aspirations. Goal and target setting at the student level is a strategy that can support mentoring and role modelling and develop students’ persistence, problem solving, and ability to overcome challenge. Addressing negative peer influence is also important at the student level, achieved through enhancing students’ academic success, and developing positive relationships amongst students, and cooperative and group learning.

**MOTIVATION**

This report gives some emphasis to the role of student motivation in enhancing achievement, behaviour, and retention. This issue receives full attention in Part 2 below which presents findings of a survey exercise measuring students’ motivation and also discusses strategies educators can use to enhance student motivation.

**FEAR OF FAILURE AND MASCULINITY**

From a need achievement theory perspective, students vary in terms of their motive to avoid failure and approach success (Atkinson 1957; McClelland, 1965). Based on a need achievement model of motivation, students can be characterised in terms of three typologies: those that are success oriented, those that are failure avoidant, and those that are failure accepting.

Success-oriented students tend to be optimistic, adopt a proactive and positive orientation to tasks, and respond to setback with optimism and energy (Covington & Omelich, 1991; Martin, 1998; Martin et al, 2001a).

Failure-avoidant students are the classic failure fearers. They tend to be anxious (Alpert & Haber, 1960), motivated by a fear of failure, live in self-doubt, and are uncertain about their ability to avoid failure or achieve success (Covington & Omelich, 1991). Although these students often work hard and achieve, they tend to be
Improving Educational Outcomes of Boys – Interim Report

adversely affected by setback as it tends to confirm their doubts about their ability and their uncertain control (Covington & Omelich, 1991; Martin, 1998; Martin & Marsh, in press; Martin et al, 2001a, in press). In essence, they lack resilience.

Failure-accepting students (sometimes referred to as learned helpless) have given up to the point of not even trying to avoid failure. These students are generally disengaged from tasks and display a helpless pattern of motivation (Abramson, Seligman, & Teasdale, 1978; see also Covington, 1992, 1997). These students lack both motivation and resilience.

From a motivation perspective, an important aim is to develop students into success strivers and shift them from failure avoidance and failure acceptance. A model developed by Martin (2001b, in press) encompasses the factors that underpin success orientation. Four factors in his model that are particularly congruent with success orientation are self-belief, learning focus, value of school, and perceived control. Most importantly, it is these factors that are the conduits for intervention aimed at promoting success orientation (Martin, 2001b, in press). Ways to do this are discussed in Part 2.

The issue of fear of failure is particularly pertinent to boys and their construction of gender. For boys, fear of failure operates across a number of domains. It relates to fear of not living up to popular images of masculinity, fear of being labelled a sissy or seen as feminine in any way (O'Doherty, 1994), fear of powerlessness (Mclean, 1997), and fear of having their sexuality questioned. In the learning domain, boys have been found to be unwilling to attempt new learning when they are uncertain of success and are less likely to re-attempt something that they had previously been unsuccessful at (Ludowyke & Scanlon, 1997). According to O'Doherty, “many of the problems boys experience during their education can be traced to their frustration and feelings of inadequacy in attempting to live up to what they believe their peers and society generally expect of them as males” (1994, p. 22).

Boys’ fear of failure can also have the effect of them exaggerating their masculinity – referred to by Jackson as ‘hyper-masculinity’ – and lead to defensive manoeuvring in the classroom and in assessment situations. Such defensive manoeuvring can take the form of defensive pessimism (setting unrealistically low expectations), self-sabotage (setting obstacles in the path to success), and even failure acceptance (Martin et al, 2001a, in press). As Jackson comments, “insecure boys, who are very
much aware of their vulnerability, strive to display a hyper-masculine performance that will not only defend themselves from the fantasized ‘weakness’ but also gain the approval of the peer group . . . as a result, not working hard at school can be seen as a defensive strategy by some boys to distance themselves from an academic world that is perceived as dangerously ‘weak’” (1998, p. 89).

Research has shown that students can be differentiated in terms of their motivation to strive for success or avoid or accept failure. Our aim as educators is to develop students who are success oriented. These students are high in self-esteem, confident, persistent, value school, and are resilient to setbacks and challenges. Failure avoiders comprise a large group of students who are grounded in a fear of failure. Fear of failure has links with students’ constructions and conceptions of masculinity and impacts negatively on their motivation, orientation towards schoolwork, enjoyment of school, behaviour, and achievement.

LITERACY

Although literacy has been raised a number of times, it has not yet received focused consideration. Literacy is consistently drawn into the debate about boys’ education. There are clear gender differences in literacy. As described earlier, Year 3 literacy benchmarking in 1999 saw 89.7% of girls attain the minimum national standard compared with 84.9% of boys (MCEETYA, 2000). The Vocational School English Literacy Survey conducted in 1996 showed that girls outperformed boys in writing, reading, speaking, and listening (DETYA, 2000). Literacy for boys declined between 1975 and 1995 with 70% of boys in 1975 demonstrating mastery of reading compared with 66% in 1995. In contrast, girls’ mastery of reading increased from 73% to 74% between 1975 and 1995 (Marks & Ainley, 1997).

Book selection

A number of commentators report that there are differences in preferences for books between boys and girls as well as differences in the ways that books are read. For example, it has been reported that boys tend to prefer to read action, fantasy, adventure, and ‘blood and thunder’ texts and read more for information whereas girls tend to enjoy books that depict the dissection of relationships (Millard, 1997).
On these bases, some have suggested that books more appropriate to boys’ interests need to be selected. Others, however, have argued that this simply reinforces dominant masculinities. One suggestion is that when texts are selected that have the potential for reinforcing dominant masculinities, this be seized as an opportunity for critical dissection of masculinity and an analysis of how gender is constructed – using the text as a prime example of gender construction (Millard, 1997). Thus, schools ought to provide a broad range of texts and the inclusion of ‘boy-friendly texts’ “be to show how masculinity is constructed by the narratives, rather than a simple acceptance of the ‘heroic’ image” (Millard, 1997, p. 161).

What Millard describes here is a form of ‘critical literacy’. This has been found to be effective in enhancing literacy in students and also equips boys with the interpretative skills they need to examine dominant cultural practices associated with masculinity (Ludowyke & Scanlon, 1997). Critical literacy “translates into boys actively connecting with the written material by asking critical questions about the accuracy, relevance, bias, truth, defects and politics of a piece of writing” (Hawkes, 2001, p. 110).

**Developing a reading culture at school**

Before implementing a reading strategy at the school, it is important to know what reading habits are occurring, their frequency, their level, and amongst which types of students. A school-wide reading questionnaire may be a good means of benchmarking reading in the school. Promoting reading following this can occur through read-a-thons, carefully matching students to books, and having students use technology to draft their own stories (Millard, 1997).

Sanderson (1995) identifies a number of strategies to promote a reading culture in schools:

- Students seeing teachers reading for pleasure
- Teachers talking about their process as a reader – eg. how they choose and read books
- Selecting books that will appeal to students – not necessarily books teachers read as youngsters or award winning books
- Reading aloud to students – injecting drama, being a mediator between the book and the students
Improving Educational Outcomes of Boys – Interim Report

- Involving parents by compiling a good book list for them to buy from or developing a ‘take-home’ reading program
- Organising reading peer groups – so that students can enthuse each other
- Engaging in ‘critical literacy’ by challenging limited male stereotypes – showing students that books are not gender neutral – rather, they actively construct gender
- Encouraging books that expand students’ versions of masculinity.

There is also a need to strike a balance between reading enjoyment and reading skill. An excessive emphasis on the technical may discourage some readers. For some students, a primary concern with grammar and phonics can result in the story being lost (Hawkes, 2001).

In its submission to the Standing Committee Inquiry into boys’ education, the ACT Department of Education and Community Services (2001) identified the following strategies to enhance literacy in the Territory:

- Paired reading
- Reading aloud
- Cross-age and cross-gender tutoring
- Monitoring and tracking
- Strategic analysis of student literacy performance
- Parental involvement.

Book aversion

When describing the relationship many boys have with books and reading, a number of authors seem to be referring to something of an aversion to books. Indeed, it has been found that one of the main factors contributing to poor literacy is a reluctance to read (Bray, Gardner, & Parsons, 1997). Hawkes (2001) identifies a series of actions to deal with book aversion amongst students:

- First eliminate the need for glasses, dyslexia, or developmental delay
- Always focus on successes in reading
- In the early stages of a student’s literacy journey keep critical comment to a minimum
- Avoid public readings until the student is a better reader
- Avoid comparisons of the student with other students
Improving Educational Outcomes of Boys – Interim Report

- Wherever possible, try to “smuggle” reading into students’ lives – eg. use magazines as a scaffold to books
- Extend literacy and literary assessment methods to include diverse assessment using short answers, multiple choice, longer answers, and creative writing.

Book aversion also requires careful selection of books that will engage students. No student can dismiss a good story: “Despite the feigned bravado and the overt display of emotional sterility, boys cannot entirely rid themselves of their humanity, of their capacity to feel, of their capacity to be greatly moved . . . Literature can be found which can stir a boy’s emotions, which can encourage a boy to be emotive and feeling in his own writing . . . The hunt is worth it” (Hawkes, 2001, p. 119).

Teaching the ‘tricks’ of literacy

Literacy is a skill that students can learn. For example, students can be explicitly taught the ‘tricks’ of effective writing. Educators can teach students to:

- Argue both sides of an issue in an essay
- Capture the reader with a strong opening paragraph
- Use grabbing opening words for paragraphs
- Define key words and what the question is asking at the outset of an essay
- Develop an essay body that is logical
- Select and use quotes effectively
- Write an effective conclusion that incorporates higher order thinking
- Avoid sweeping generalisations (Hawkes, 2001).

These are all skills that can be taught and learned. There need not be any mystery about the requirements and processes underpinning literacy.

The school library

The school library can be a very crucial rallying point for enhancing literacy. With this in mind, it has been suggested that students should be given greater responsibility in the library. For example, they could be responsible for inducting younger students to the library, explaining its functions and organisation. Students can also be drawn closer to the library through recommending books to be purchased and displayed (inside the cover the book can have a certificate, “Chosen by . . .”). It is also important
to keep books up to date in libraries with a “ruthless” culling of books to remove ‘unappealing’ books from shelves (Millard, 1997).

The library should also be promoted as having a wider resource role. For example, its critical role in ICT can draw boys in and also break the stereotype of the library as purely bookish (Noble & Bradford, 2000). A national poll of school students in the United Kingdom found that two-thirds would be encouraged to go to the library if they could access the Internet and CD-ROMS when there (Gordon & Griffith, 1997). McGuinn (2000) suggests that ICT be incorporated into the library as much as possible. This involves computerised catalogues, asking boys to create a PowerPoint induction presentation for new students to the school, and providing Internet training to older students who can then run workshops for younger students in the library.

Frater (1997) identified five common strengths in effective school libraries, as follows:

- An energetic librarian
- Close liaison between the librarian, the English department, and the special needs team
- A library training program for students (that also develops research skills)
- A well-judged quality selection of stock
- Involvement of the library in school-wide curriculum developments.

The library can be the instigator of other initiatives, including:

- The site for literary lunches – students bring their lunch into the library to hear a reading
- Organising excursions to bookshops for students to select books
- Inviting authors or poets to speak to students and read from their work (these people need to be inspiring and good communicators).

**Transition points**

The transition between primary and secondary school is a critical time. Secondary school has different literacy requirements and expectations than primary school. According to Frater, “most subjects immediately make heavy new demands on the new pupils’ literacy. They provide a diet of reading material that differs quite sharply from the staple of primary years: it is predominantly narrative; it is formal in style; it seldom uses dialogue; and it does not always, or even commonly, follow simple
chronological order. Moreover, most subject departments require pupils to write in these unfamiliar genres with little instruction. In short, stiff new challenges face [even] the pupil whose literacy is secure” (1997, p. 16).

Feeder primary schools can liaise with secondary schools to understand what expectations and texts secondary school holds for their students soon to graduate. More specifically, the secondary English department can link with feeder schools to discuss upcoming demands and challenges and determine ways the primary schools can prepare students for these (Noble & Bradford, 2000).

Another strategy to assist transition is to have students in Year 6 order a book of their choosing and have it waiting for them in the secondary school library when they begin Year 7 (Noble & Bradford, 2000). This immediately hooks them into the library and also positions books as an important focus for assisting their transition.

**Literacy in other domains**

It has been noted that there are increasing literacy demands in mathematics and science disciplines. As Rowe reports, “due to shifts in pedagogical emphasis from math to numeracy by mathematics educators, the demand for verbal reasoning and written communication skills continues to be a feature of curricula content and assessment” (2000, p. 21).

Literacy, then, is not confined to English or the humanities. There are many concepts that require semantic understanding to effectively operate in the mathematical or scientific setting. As Noble and Bradford describe, “mass, weight, pitch, orbit, revolve, conduct and insulate, along with hundreds of others, have general as well as scientific meanings and it is unreasonable to expect people to learn these by osmosis” (2000, p. 128).
Literacy consistently emerges as a distinguishing feature of boys’ and girls’ educational outcomes. Research shows that boys perform more poorly than girls in a number of literacy domains. Addressing the literacy gap requires: careful selection of diverse reading material that is interesting to boys and also provides scope for critical analysis of gender construction, auditing reading habits within the school and using findings to promote a reading culture, recognising and responding to boys for whom book aversion is a problem, explicitly teaching the many ‘tricks’ of literacy, supporting and extending the important role of the library, developing strategies to assist students’ transition from primary to secondary school, and assisting students to effectively deal with literacy demands across the curriculum.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

In the last decade there has been increasing recognition of the potential for ICT to assist all school students in terms of learning outcomes, motivation, and self-esteem. Indeed, ICT not only has the potential to enhance achievement and motivation at school but also to better prepare students for the world of work and their ability to operate in the knowledge- and information-based economy (Meredyth, Russell, Blackwood, Thomas, & Wise, 1999). As Kress states, “the new economy demands new kinds of thinking, dispositions to flexibility and innovativeness, new kinds of hand/eye/brain coordination in the visual analysis of quite extraordinary complexity. The new world of communication is vastly more diverse and demanding than that implied in the currently advocated, traditional literacy agendas” (1998, p. 4-5).

Benefits of ICT

There has also been increasing recognition of the potential for ICT to assist boys in terms of learning outcomes, motivation, and self-esteem (Hawkes, 2001). Australian and overseas research has shown that ICT in the classroom can assist a diversity of at-risk groups in which boys are highly represented. These include:

- Students with literacy problems (Higgins & Raskind, 1997)
- Students with learning difficulties or learning disabilities (Ashton, 1999)
- Low achievers or those at-risk of failure (Chen & Looi, 1999; Lewis, 1999)
Students with attention-deficit/hyperactivity disorder (Smith & Irvine, 1999)
Students with behaviour disorders (Schery & O'Connor, 1997).

Through the introduction of ICT to these students’ lives, researchers have found:

- Enhanced motivation, self-confidence, and attitudes to learning (Gan, 1999)
- Improved instruction (Hughes & Maccini, 1997)
- Enhanced achievement (Elliott & Hall, 1997)
- Greater interest in school work (Diggs, 1997)
- Improved reading comprehension (Higgins & Raskind, 1997).

ICT also has the potential to offer students more expanded opportunities for ‘written communication’. This may be particularly useful for students who do not have strong written skills. For these students, “writing can seem a daunting prospect . . . it is so often associated in their minds with slow, painstaking, contemplative words such as ‘reflection’, ‘drafting’, ‘revision’, ‘refinement’. As far as they are concerned, its function in school seems to be to provide a public record of their failure – an opportunity to make mistakes” (McGuinn, 2000, p. 53). For these at-risk students the use of ICT with an emphasis on functional communication may be a useful ‘leg-up’ into the world of writing.

ICT also enables students to present their work more clearly and legibly, provides immediate feedback which is reinforcing, requires students to transform information, provides opportunities to be creative with presentation (eg. through graphics), allows self-paced learning, and develops collaboration (physically or virtually). Essentially, ICT is focused on skill building. Through computers “the vast amount of information acquisition is now no longer the challenge, but rather it is the synthesis of that information that is the challenge. This means that the use of ICT can assist boys to move away from minds filled with knowledge with a limited shelf life, to minds which are adept at critical and creative thinking” (Hawkes, 2001, p. 64).

**Leading ICT practice**

Education Network Australia (EdNA) has developed a taxonomy of ‘leading practice’ for the use of ICT in classrooms. This taxonomy suggests that effective use of ICT:
• Interests and motivates students for greater learning and promotes independent thought
• Is interactive, relevant and inclusive
• Is based on sound pedagogical principles
• Caters for a wide range of learning abilities and styles
• Develops students’ IT and ICT abilities
• Enhances life long learning skills such as critical thinking, problem solving, research, and analytical skills
• Involves both teachers and students in learning and facilitation
• Is dependent on teachers’ ICT professional development in ICT use.

Challenges in implementing ICT
ICT, however, is not a panacea. There are challenges to the effective implementation of ICT including:

• Access difficulties for students (either at school or at home)
• Students’ apprehensions and anxieties in relation to ICT
• Poor quality software
• Access difficulties for teachers
• Teacher anxieties and apprehensions in relation to ICT in the classroom
• A lack of time for teachers to learn and experiment with ICT
• Inadequate professional development of teachers (Zammit, 1992).

ICT and literacy
The use of ICT in students’ lives and their literacy is not unconnected. Computers, for example, require students to read on-screen, read sometimes-complex texts to update hardware and software, and read instructions to graduate to more difficult levels of tasks and games. Millard argues that technology can be used to expand opportunities for talking, reading, and writing: “It involves keeping up what has always been central to English teaching: the ability to make use of the pupils’ current social interests by helping them to make connections between their lived experience and other modes of thought and expression” (1997, p. 155).
The integration of ICT into the classroom has the potential to expand students’ skills for the world of work and the emerging knowledge-based economy as well as assist students experiencing difficulties academically. ICT needs to be high quality, be based on sound pedagogical principles, cater to diverse groups of students, and be supported by appropriate professional development of teachers.
PART 2. STUDENT MOTIVATION IN THE ACT

INTRODUCTION
In this report, emphasis is given to the role of motivation in student outcomes. Motivation can be conceptualised as students’ energy and drive to learn, work effectively, and achieve to their potential at school and the behaviours that follow from this energy and drive. Motivation plays a large part in students’ interest in and enjoyment of school and study. Motivation also underpins students’ achievement (Marsh, Martin, & Debus, 2001; Martin, 1998, 2001b, in press; in review a, in review b, in review c; Martin & Debus, 1998; Martin & Marsh, in press; Martin et al, 2001a, 2001b, in press; Meece, Wigfield, & Eccles, 1990; Pintrich & DeGroot, 1990; Schunk, 1990).

Students at all points on the academic spectrum benefit from adaptive motivation. Underachievers benefit through elevated chances of success. Students who achieve to their potential benefit through maintenance of their strengths. Disruptive students benefit through greater engagement in school and their studies. Educators benefit through enhanced opportunities for learning and development in the classroom. Motivation is, therefore, relevant to all students (boys and girls) and educators.

The aim of this component of the research is to describe a model of student motivation and present the findings of a data collection exercise in which ACT students’ motivation was measured using the Student Motivation Scale (Martin, 2001b, in review). Results from statistical analysis of this data are then presented along with variation in motivation as a function of gender, year level, ethnicity, and socio-economic status.

A MODEL OF MOTIVATION
Martin (2001b, in press) has developed a model of motivation that reflects the thoughts, feelings, and behaviours underpinning academic engagement at school. The model separates motivation into factors that enhance motivation and those that reduce motivation. These are called boosters and guzzlers respectively. Boosters and guzzlers are then separated into thoughts (and/or feelings) and behaviours. Thus there are booster thoughts and booster behaviours as well as guzzler thoughts and guzzler behaviours. Figure 2 shows this model and the specific facets of motivation that comprise it.
Booster thoughts include self-belief, learning focus, and value of schooling; booster behaviours are persistence, study management, and planning and monitoring; guzzler thoughts/feelings are anxiety and low control; and, guzzler behaviours are failure avoidance and self-sabotage.

The strength of a model along these lines is that it can be easily communicated by educators to students and following from this, is readily understandable by students. The educator and student can easily separate thinking from behaviour and the ‘good’ (boosters) motivation from the ‘bad’ (guzzlers). Thus, this model is an easy way for students to understand their motivation and an easy way for educators and counsellors to explain it to them. When students understand motivation and the dimensions that comprise it, intervention is more meaningful to them, and as a consequence, is likely to be more successful.
Motivation is critical to students’ achievement and enjoyment at school. Motivation is multi-faceted, comprising factors that enhance motivation – ‘motivation boosters’ (self-belief, value of schooling, learning focus, planning and monitoring, study management, persistence) and factors that reduce motivation – ‘motivation guzzlers’ (anxiety, low control, failure avoidance, self-sabotage).

METHOD

Sample and procedure
Respondents were 1,930 students from Year 7 and Year 9 in eight government ACT high schools. Of students for whom gender and year-level data were available (N=1,721), 54% were from Year 7 and 46% from Year 9; 50% were males and 50% females. A total of 177 were identified as ESL and 13 students were identified as Indigenous.

Year-level, gender, literacy and numeracy, ethnicity, and SES data were not available for some students because these students did not record their student identification numbers on the survey or recorded their identification numbers incorrectly. Hence, sample numbers vary from analysis to analysis depending on the available pool of complete data. For example, data on gender and year were unavailable for 209 students.

Teachers administered the Student Motivation Scale to students during class. The rating scale was first explained and a sample item presented. Students were then asked to complete the Student Motivation Scale on their own and to return the completed instrument to the teacher at the end of class. Students recorded their identification numbers on the cover page and these were then linked to data held by the Department on their gender, age, ethnicity, literacy and numeracy, and SES.

Materials
The Student Motivation Scale is an instrument that measures high school students’ motivation. It assesses motivation through six boosters and four guzzlers.
Boosters

Each booster falls into one of two groups: booster thoughts and booster behaviours. Booster thoughts include self-belief, learning focus, and value of schooling. Booster behaviours include persistence, planning and monitoring, and study management.

Self-belief (eg. "If I try hard, I believe I can do my schoolwork well"): Self-belief is students' belief and confidence in their ability to understand or to do well in their schoolwork, to meet challenges they face, and to perform to the best of their ability.

Value of schooling (eg. "Learning at school is important to me"): Value of schooling is how much students believe what they learn at school is useful, important, and relevant to them or to the world in general. If students value schooling they tend to believe that what they learn can be used in other parts of their life, believe that it is important to learn at school, and feel that what they learn at school is relevant to current events in the world.

Learning focus (eg. "I feel very pleased with myself when I really understand what I’m taught at school"): Learning focus is being focused on learning, solving problems, and developing skills. The goal of a learning focus is to be the best student one can be. If students are learning focused they tend to work hard, want to learn more, enjoy learning new things, enjoy solving problems by working hard, and do a good job for its own satisfaction and not just for rewards.

Planning and monitoring (eg. "Before I start an assignment I plan out how I am going to do it"): Planning and monitoring is how much students plan their schoolwork, assignments, and study and how much they keep track of their progress as they are doing them.

Study management (eg. “When I study, I usually study in places where I can concentrate"): Study management refers to the way students use their study time, organise their study timetable, and choose and arrange where they study.

Persistence (eg. "If I can’t understand my schoolwork at first, I keep going over it until I understand it"): Persistence is how much students keep trying to work out an answer or to understand a problem even when that problem is difficult or is challenging. If students are persistent they tend to keep going over schoolwork until they understand
it, spend time trying to understand things that do not make sense straightaway, and keep working at a task even when it is difficult.

**Guzzlers**

Each guzzler falls into one of two groups: guzzler thoughts/feelings and guzzler behaviours. Guzzler thoughts/feelings include anxiety and low control. Guzzler behaviours are failure avoidance and self-sabotage.

**Anxiety** (eg. "When exams and assignments are coming up, I worry a lot"): Anxiety has two parts: feeling nervous and worrying. Feeling nervous is the uneasy or sick feeling students get when they think about their schoolwork, assignments, or exams. Worrying is their fear about not doing very well in their schoolwork, assignments, or exams.

**Low control** (eg. "I'm often unsure how I can avoid doing poorly at school"): Students are low in control when they are unsure about how to do well or how to avoid doing poorly. If students are low in control they tend to be unsure about how to do well, be unsure about how to avoid doing poorly, and can feel helpless when doing their schoolwork.

**Failure avoidance** (eg. "Often the main reason I work at school is because I don’t want to disappoint my parents"): Students have an avoidance focus when the main reason they do their schoolwork is to avoid doing poorly or to avoid being seen to do poorly. If students have an avoidance focus they tend to do their schoolwork mainly to avoid getting bad marks, do their schoolwork mainly to avoid people thinking they cannot do it, and do their schoolwork mainly because they do not want to disappoint their parents or teachers.

**Self-sabotage** (eg. "I sometimes don’t study very hard before exams so I have an excuse if I don’t do as well as I hoped"): Students self sabotage when they do things that reduce their chances of success at school. Examples are putting off doing an assignment or wasting time while they are meant to be doing their schoolwork or studying for an exam. If students self-sabotage they do not try hard at assignments or difficult schoolwork, do not study very hard before tests or exams, and do other things when they should be doing their schoolwork or studying.
Measurement and statistical analysis
Each booster and guzzler is comprised of four items. To each item, students rated themselves on a scale of 1 (‘Strongly Disagree’) to 7 (‘Strongly Agree’). Each student’s answers to the four items on each motivation area were then aggregated and converted to a score out of 100. Hence, each student was assigned ten scores out of 100. All mean scores presented in this report are rounded to whole numbers.

If a student answered less than one third of the instrument, he or she was dropped from further analyses. In total, twenty-five students were dropped from analyses, yielding an effective sample size of 1,930 students.

Data were analysed using LISREL 8.3 and SPSS for Windows. Analyses included confirmatory factor analysis, tests of reliability, independent samples t-tests, one- and two-way ANOVAs, and Pearson product moment correlations.

RESULTS
Confirmatory factor analysis
Before aggregating items to form 10 motivation subscale scores, confirmatory factor analysis (CFA) was carried out to justify forming these subscales. CFA was conducted using LISREL 8.3 (Joreskog & Sorbom, 1999). A detailed presentation of the conduct of CFA is beyond the scope of the present report and is available elsewhere (e.g., Bollen, 1989; Joreskog & Sorbom, 1989; Pedhazur & Schmelkin, 1991). Maximum likelihood was the method of estimation used for the models. The raw data were used as input to PRELIS 2 (Joreskog & Sorbom, 1999) and a covariance matrix was produced which was subsequently analysed using LISREL. In terms of goodness of fit indices, the Comparative Fit Index (CFI) is emphasised as simulation studies have shown that it is relatively independent of sample size and also imposes an appropriate penalty for inclusion of additional variables in a given model (Marsh, Balla, & Hau, 1996). Following Marsh et al (1996), the Relative Noncentrality Index (RNI) and Root Mean Square Error of Approximation (RMSEA) are also emphasised as measures of goodness of fit. CFI and RNI values above .90 and RMSEA below .05 are typically considered to indicate acceptable fit of the data to the model.
The CFA yielded an acceptable fit to the data (chi square=3308.28, df=695, RNI=.92, TLI=.91, RMSEA=.046). Factor loadings are presented in Table 4. Taken together, the loadings are high.
### Table 4. Factor loadings for the Student Motivation Scale

|              | SB1 | SB2 | SB3 | SB4 | VS1 | VS2 | VS3 | VS4 | LF1 | LF2 | LF3 | LF4 | PM1 | PM2 | PM3 | PM4 | SM1 | SM2 | SM3 | SM4 | P1  | P2  | P3  | P4  | ANX1 | ANX2 | ANX3 | ANX4 | LC1 | LC2 | LC3 | LC4 | AV1 | AV2 | AV3 | AV4 | SS1 | SS2 | SS3 | SS4 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Descriptive statistics and reliability

Given the strong factor structure, it was considered appropriate to aggregate items to form subscales. Subscales were formed by generating the mean of the set of four items for each booster and guzzler. This mean was then converted to a score out of 100. All scores /100 in this report are presented as rounded whole numbers.

Descriptive and reliability statistics for each booster and guzzler are presented in Table 5. Results show that all boosters and guzzlers are reliable. Distributional data also show that each booster and guzzler is approximately normally distributed.

In terms of boosters, students score highest on booster thoughts (self-belief, value of schooling, learning focus). However, they are not so strong in translating these adaptive thoughts into adaptive behaviour, scoring relatively lower in planning and monitoring (particularly), study management, and persistence. In terms of guzzlers, we see that students’ anxiety is of most concern.

Table 5. Descriptive statistics and Cronbach’s alphas

<table>
<thead>
<tr>
<th></th>
<th>Mean /100</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>79</td>
<td>14.9</td>
<td>-.95</td>
<td>1.40</td>
<td>.78</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>78</td>
<td>15.5</td>
<td>-1.01</td>
<td>1.27</td>
<td>.77</td>
</tr>
<tr>
<td>Learning focus</td>
<td>78</td>
<td>15.3</td>
<td>-.87</td>
<td>.92</td>
<td>.82</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>56</td>
<td>19.1</td>
<td>-.08</td>
<td>-.43</td>
<td>.81</td>
</tr>
<tr>
<td>Study management</td>
<td>67</td>
<td>18.7</td>
<td>-.56</td>
<td>-.04</td>
<td>.81</td>
</tr>
<tr>
<td>Persistence</td>
<td>70</td>
<td>16.2</td>
<td>-.63</td>
<td>.29</td>
<td>.79</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>60</td>
<td>20.9</td>
<td>-.11</td>
<td>-.68</td>
<td>.79</td>
</tr>
<tr>
<td>Low control</td>
<td>51</td>
<td>19.2</td>
<td>.03</td>
<td>-.62</td>
<td>.83</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>51</td>
<td>20.6</td>
<td>.21</td>
<td>-.61</td>
<td>.79</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>41</td>
<td>18.9</td>
<td>.56</td>
<td>-.21</td>
<td>.81</td>
</tr>
</tbody>
</table>
Improving Educational Outcomes of Boys – Interim Report

Year-level effects

At the outset it was unclear whether to conduct separate analyses for each year group or to pool all Year 7 and Year 9 data. To guide decision making, it was considered important to explore year-level effects in motivation.

Year-level effects on each facet of motivation were explored using a series of independent samples t-tests. Results are shown in Table 6. Clearly, there are differences between Year 7 and Year 9 students such that Year 7 students are significantly higher on all boosters but also significantly lower in control and higher in failure avoidance. These results suggest that where relevant subsequent analyses should not only be conducted across the sample as a whole but also by year group.

<table>
<thead>
<tr>
<th></th>
<th>Year 7 Mean</th>
<th>Year 9 Mean</th>
<th>t</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>81</td>
<td>77</td>
<td>5.65***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>82</td>
<td>75</td>
<td>9.86***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Learning focus</td>
<td>80</td>
<td>76</td>
<td>5.13***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>59</td>
<td>52</td>
<td>6.63***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Study management</td>
<td>70</td>
<td>64</td>
<td>6.87***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Persistence</td>
<td>72</td>
<td>66</td>
<td>8.08***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>60</td>
<td>60</td>
<td>.19</td>
<td>-</td>
</tr>
<tr>
<td>Low control</td>
<td>53</td>
<td>49</td>
<td>4.02***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>53</td>
<td>48</td>
<td>4.48***</td>
<td>7&gt;9</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>40</td>
<td>40</td>
<td>.19</td>
<td>-</td>
</tr>
</tbody>
</table>

*** p<0.001

Year 7 students are significantly higher than Year 9 students on all six boosters. However, Year 7 students are also significantly lower than Year 9 on control and higher in failure avoidance.

Gender effects

Gender effects in motivation were first explored separately for each year group and then for the sample as a whole using a series of independent samples t-tests. In
Table 7 are gender effects on each facet of motivation. In both Year 7 and Year 9, girls are significantly higher in learning focus, planning and monitoring, and study management. In both year groups girls are also significantly higher in anxiety. In Year 7 only, girls are significantly higher in persistence and boys are significantly higher in both failure avoidance and self-sabotage. In Year 9 only, girls are lower in perceived control.
Table 7. Gender effects on motivation

<table>
<thead>
<tr>
<th></th>
<th>Year 7</th>
<th>Year 9</th>
<th>Year 7 and Year 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>t</td>
</tr>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>81</td>
<td>80</td>
<td>.58</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>82</td>
<td>81</td>
<td>1.12</td>
</tr>
<tr>
<td>Learning focus</td>
<td>81</td>
<td>79</td>
<td>2.69***</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>62</td>
<td>55</td>
<td>5.30***</td>
</tr>
<tr>
<td>Study management</td>
<td>74</td>
<td>67</td>
<td>6.13***</td>
</tr>
<tr>
<td>Persistence</td>
<td>75</td>
<td>67</td>
<td>4.90***</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>63</td>
<td>56</td>
<td>4.66***</td>
</tr>
<tr>
<td>Low control</td>
<td>53</td>
<td>53</td>
<td>.05</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>51</td>
<td>54</td>
<td>2.45*</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>38</td>
<td>43</td>
<td>3.74***</td>
</tr>
</tbody>
</table>

*p < 0.05  ** p < 0.01  *** p < 0.001
Interaction of gender and year level

The table above implies that gender effects can differ from Year 7 to Year 9, indicating an interaction between year level and gender. The possibility of an interaction was therefore explored using a series of 2 (Year 7, Year 9) x 2 (girls, boys) ANOVAs on each of the ten facets of motivation. Significant interaction effects emerged on:

- Study management, F(1,1682)=4.26, p<0.05, such that gender effects in Year 7 were larger than gender effects in Year 9 (see Table 7).
- Persistence, F(1,1682)=6.10, p<0.05, such that gender effects in Year 7 were larger than gender effects in Year 9 (see Table 7).
- Failure avoidance, F(1,1682)=6.93, p<0.01, such that Year 7 boys were higher than Year 7 girls whereas in Year 9 girls were slightly (and non-significantly) higher than boys (see Table 7).
- Self-sabotage, F(1, 1682)=7.24, p<0.01, such that Year 7 boys were higher than Year 7 girls whereas in Year 9 girls were slightly (and non-significantly) higher than boys (see Table 7).

Across Years 7 and 9, girls are significantly higher on learning focus, planning and monitoring, and study management. Girls in Years 7 and 9 are also significantly higher in anxiety. In Year 7 only, boys are significantly higher in failure avoidance and self-sabotage and girls are significantly higher in persistence. In Year 9 only, girls are significantly lower in perceived control.

Correlations between motivation and literacy and numeracy

Relationships between each facet of motivation and students’ 2001 literacy and numeracy were explored. In the first set of analyses, data for boys and girls were pooled (Table 8). In the second set of analyses, data for girls and boys were analysed separately (Table 9).

Literacy scores were computed by generating the mean of students’ standardized scores on reading, spelling, spelling in writing, writing content, and writing language.
Numeracy scores were computed by finding the mean of students’ standardized scores on measurement, number, and space.

Taken as a whole:

- Self-belief is correlated with literacy and numeracy (more so for Year 9 students)
- Persistence is correlated with literacy and numeracy (more so for Year 9 students)
- The strongest effects are found for guzzlers such that low control, failure avoidance, and self-sabotage are negatively correlated with literacy and numeracy
- Anxiety is negatively correlated with numeracy
- Relationships between motivation and both literacy and numeracy do not differ markedly between boys and girls.

Although small, there is a negative relationship between planning and numeracy. This may be because planning as measured by the Student Motivation Scale is related to assignments, study, and homework involving more extended and carefully thought out tasks than briefer numeracy testing.
Table 8. Correlation by year level between each facet of motivation and 2001 literacy and numeracy

<table>
<thead>
<tr>
<th></th>
<th>Year 7</th>
<th></th>
<th>Year 9</th>
<th></th>
<th>Total Sample</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Literacy</td>
<td>Numeracy</td>
<td>Literacy</td>
<td>Numeracy</td>
<td>Literacy</td>
<td>Numeracy</td>
</tr>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>.08*</td>
<td>.09**</td>
<td>.21***</td>
<td>.22***</td>
<td>.13***</td>
<td>.15***</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>-.01</td>
<td>-.02</td>
<td>.08*</td>
<td>.07</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>Learning focus</td>
<td>-.01</td>
<td>-.09**</td>
<td>.13***</td>
<td>.04</td>
<td>.05</td>
<td>-.03</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>-.01</td>
<td>-.09**</td>
<td>.01</td>
<td>-.12**</td>
<td>-.02</td>
<td>-.11**</td>
</tr>
<tr>
<td>Study management</td>
<td>.02</td>
<td>-.07*</td>
<td>.10**</td>
<td>.01</td>
<td>.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Persistence</td>
<td>.07*</td>
<td>.07*</td>
<td>.12**</td>
<td>.15***</td>
<td>.08**</td>
<td>.10***</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.09**</td>
<td>-.19***</td>
<td>.07</td>
<td>-.11**</td>
<td>-.02</td>
<td>-.15***</td>
</tr>
<tr>
<td>Low control</td>
<td>-.26***</td>
<td>-.35***</td>
<td>-.27***</td>
<td>-.37***</td>
<td>-.27***</td>
<td>-.36***</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>-.21***</td>
<td>-.19***</td>
<td>-.13**</td>
<td>-.20***</td>
<td>-.18***</td>
<td>-.20***</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>-.26***</td>
<td>-.25***</td>
<td>-.34***</td>
<td>-.35***</td>
<td>-.29***</td>
<td>-.29***</td>
</tr>
</tbody>
</table>

* p<0.05  ** p<0.01 *** p<0.001
Table 9. Correlations by gender between each facet of motivation and 2001 literacy and numeracy

<table>
<thead>
<tr>
<th>Boosters</th>
<th>Girls</th>
<th></th>
<th>Boys</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Literacy</td>
<td>Numeracy</td>
<td>Literacy</td>
<td>Numeracy</td>
</tr>
<tr>
<td>Self-belief</td>
<td>.17***</td>
<td>.17***</td>
<td>.11**</td>
<td>.13***</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>.04</td>
<td>.06</td>
<td>-.01</td>
<td>-.04</td>
</tr>
<tr>
<td>Learning focus</td>
<td>.03</td>
<td>.01</td>
<td>.02</td>
<td>-.06</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>-.03</td>
<td>-.05</td>
<td>-.07*</td>
<td>-.16***</td>
</tr>
<tr>
<td>Study management</td>
<td>.01</td>
<td>-.01</td>
<td>.01</td>
<td>-.06</td>
</tr>
<tr>
<td>Persistence</td>
<td>.07</td>
<td>.12**</td>
<td>.06</td>
<td>.08*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Guzzlers</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Literacy</td>
<td>Numeracy</td>
<td>Literacy</td>
<td>Numeracy</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.05</td>
<td>-.10**</td>
<td>-.08*</td>
<td>-.19***</td>
</tr>
<tr>
<td>Low control</td>
<td>-.32***</td>
<td>-.34***</td>
<td>-.26***</td>
<td>-.38***</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>-.18***</td>
<td>-.15***</td>
<td>-.18***</td>
<td>-.25***</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>-.32***</td>
<td>-.32***</td>
<td>-.26***</td>
<td>-.28***</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01  ***p<0.001

The role of ethnicity
A total of 177 (14%) students were identified as ESL.

A series of 2 (ESL, non-ESL) x 2 (girls, boys) ANOVAs was performed on each of the ten motivation facets to determine the effect of ethnicity and its interaction with gender. Data for Year 7 and 9 students were pooled, as the ESL sample size was considered too small to disaggregate further by year level. No significant interactions emerged, indicating that gender effects are generally consistent across ESL and non-ESL student groups.

Given that no interaction with gender was found, the independent effect of ethnicity was explored using a series of independent samples t-tests. Table 10 presents findings. In terms of boosters, data shows that ESL students are significantly higher than non-ESL students in value of schooling, learning focus, planning and monitoring, and study management. However, ESL students are also significantly lower in perceived control. It is uncertain as to how representative this group of ESL students is – not only in terms of the ACT but also in terms of other states and territories in
Australia. It is therefore recommended that generalising to the broader ESL population should be done very carefully.

Table 10. Ethnicity effects for Year 7 and Year 9 students

<table>
<thead>
<tr>
<th></th>
<th>ESL Mean</th>
<th>Non-ESL Mean</th>
<th>t</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>80</td>
<td>78</td>
<td>1.44</td>
<td>-</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>81</td>
<td>77</td>
<td>2.49</td>
<td>ESL&gt;NESL</td>
</tr>
<tr>
<td>Learning focus</td>
<td>81</td>
<td>77</td>
<td>2.65</td>
<td>ESL&gt;NESL</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>58</td>
<td>55</td>
<td>2.33</td>
<td>ESL&gt;NESL</td>
</tr>
<tr>
<td>Study management</td>
<td>70</td>
<td>66</td>
<td>2.72</td>
<td>ESL&gt;NESL</td>
</tr>
<tr>
<td>Persistence</td>
<td>71</td>
<td>69</td>
<td>1.69</td>
<td>-</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>60</td>
<td>59</td>
<td>.86</td>
<td>-</td>
</tr>
<tr>
<td>Low control</td>
<td>54</td>
<td>50</td>
<td>2.63</td>
<td>ESL&gt;NESL</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>20</td>
<td>20</td>
<td>1.39</td>
<td>-</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>43</td>
<td>40</td>
<td>1.92</td>
<td>-</td>
</tr>
</tbody>
</table>

* p<0.05 ** p<0.01

Note. It is unclear how representative this sample of ESL students is and so generalising from these findings should be done with care.

Only 13 Indigenous students were identified in the sample and this is considered too small a sample size with which to conduct meaningful and generalisable analyses.

ESL students are significantly higher than non-ESL students in value of schooling, learning focus, planning and monitoring, and study management. However, they are also lower in perceived control. Gender effects are generally consistent across ESL and non-ESL students. It is uncertain as to how representative this group of ESL students is – not only in terms of the ACT but also in terms of other states and territories in Australia. **It is therefore recommended that generalising to the broader ESL population should be done very carefully.**
The role of socio-economic status

Socio-economic status (SES) was determined through an index of relative socioeconomic disadvantage (IRSED). Students were grouped as follows:

- Lower 25% = IRSED below 1058
- Middle 50% = IRSED between 1058 and 1134
- Upper 25% = IRSED above 1134

A series of 2 (girls, boys) x 3 (lower 25%, middle 50%, upper 25%) ANOVAs were performed on each of the ten motivation facets to determine the effect of SES and its interaction with gender (no interaction with year-level was hypothesised and so was not tested). No significant interactions emerged, indicating that gender effects are generally consistent across SES groups.

Given that no interaction with gender was found, the independent effect of SES was explored using a series of one-way ANOVAs. Significant effects were followed up by post-hoc comparisons using the Student Newman Keuls test. Table 11 presents findings. These findings show that lower and middle SES students are significantly lower than upper SES students in control and higher in failure avoidance. Middle SES students are also significantly higher than upper SES students in self-sabotage.

It is uncertain as to how representative students in these three SES groupings are of SES groupings in the broader population – not only in terms of the ACT but also in terms of other states and territories in Australia. It is therefore recommended that generalising to SES groupings in the broader population should be done very carefully.
Table 11. SES effects for Year 7 and Year 9 students

<table>
<thead>
<tr>
<th></th>
<th>Lower 25% Mean</th>
<th>Middle 50% Mean</th>
<th>Upper 25% Mean</th>
<th>F</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boosters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-belief</td>
<td>79</td>
<td>78</td>
<td>79</td>
<td>.93</td>
<td>-</td>
</tr>
<tr>
<td>Value of schooling</td>
<td>79</td>
<td>78</td>
<td>78</td>
<td>.45</td>
<td>-</td>
</tr>
<tr>
<td>Learning focus</td>
<td>80</td>
<td>78</td>
<td>78</td>
<td>2.63</td>
<td>-</td>
</tr>
<tr>
<td>Planning and monitoring</td>
<td>57</td>
<td>55</td>
<td>55</td>
<td>1.74</td>
<td>-</td>
</tr>
<tr>
<td>Study management</td>
<td>68</td>
<td>67</td>
<td>68</td>
<td>.66</td>
<td>-</td>
</tr>
<tr>
<td>Persistence</td>
<td>71</td>
<td>69</td>
<td>70</td>
<td>2.26</td>
<td>-</td>
</tr>
<tr>
<td><strong>Guzzlers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>59</td>
<td>59</td>
<td>58</td>
<td>.28</td>
<td>-</td>
</tr>
<tr>
<td>Low control</td>
<td>53</td>
<td>51</td>
<td>48</td>
<td>5.83**</td>
<td>L, M&gt;U</td>
</tr>
<tr>
<td>Failure avoidance</td>
<td>51</td>
<td>51</td>
<td>48</td>
<td>4.31*</td>
<td>L, M&gt;U</td>
</tr>
<tr>
<td>Self-sabotage</td>
<td>40</td>
<td>41</td>
<td>38</td>
<td>3.36*</td>
<td>M&gt;U</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01

Note. It is unclear how representative students in these SES groupings are of SES groupings in the broader population and so generalising from these findings should be done with care.

LOWER AND MIDDLE SES STUDENTS ARE SIGNIFICANTLY LOWER THAN UPPER SES STUDENTS IN CONTROL AND SIGNIFICANTLY HIGHER IN FAILURE AVOIDANCE. MIDDLE SES STUDENTS ARE SIGNIFICANTLY HIGHER THAN UPPER SES STUDENTS IN SELF-SABOTAGE. GENDER EFFECTS ARE GENERALLY CONSISTENT ACROSS LOWER, MIDDLE, AND UPPER SES STUDENT GROUPINGS. IT IS UNCERTAIN AS TO HOW REPRESENTATIVE STUDENTS IN THESE THREE SES GROUPINGS ARE OF SES GROUPINGS IN THE BROADER POPULATION – NOT ONLY IN TERMS OF THE ACT BUT ALSO IN TERMS OF OTHER STATES AND TERRITORIES IN AUSTRALIA. IT IS THEREFORE RECOMMENDED THAT GENERALISING TO SES GROUPINGS IN THE BROADER POPULATION SHOULD BE DONE VERY CAREFULLY.

DISCUSSION OF MOTIVATION FINDINGS

Summary of findings

The data point to a number of gender, year-level, ethnicity, and SES effects. Taken together, results show that:

DR Andrew Martin
AJ Martin Research
The factor structure of the Student Motivation Scale is clear
Each subscale representing the proposed facets of motivation is reliable
In terms of boosters, students are higher on booster thoughts (self-belief, learning focus, value of schooling) and lower in booster behaviours (planning and monitoring, study management, persistence)
In terms of guzzlers, anxiety is highest
Year 7 students are significantly higher than Year 9 students on every booster
Year 7 students are significantly lower than Year 9 students in control and higher in failure avoidance
In both Year 7 and Year 9, girls are significantly higher in learning focus, planning and monitoring, and study management
In both year groups girls are also significantly higher in anxiety.
In Year 7 only, girls are significantly higher in persistence and boys are significantly higher in both failure avoidance and self-sabotage.
In Year 9 only, girls are lower in perceived control.
Self-belief and persistence are correlated with literacy and numeracy (more so for Year 9 students)
The strongest effects in literacy and numeracy are found for guzzlers such that low control, failure avoidance, and self-sabotage are negatively correlated with literacy and numeracy
Anxiety is negatively correlated with numeracy
Correlations between motivation and both literacy and numeracy do not differ markedly between boys and girls
ESL students are significantly higher than non-ESL students in value of schooling, learning focus, planning and monitoring, and study management. Gender effects are generally consistent across ESL and non-ESL students. However, as discussed earlier, it is recommended that generalising to the broader ESL population should be done very carefully
Lower and middle SES students are significantly lower than upper SES students in control and higher in failure avoidance. Middle SES students are also significantly higher than upper SES students in self-sabotage. Gender effects are generally consistent across SES student groupings. However, as discussed earlier, it is recommended that generalising to SES groupings in the broader population should be done very carefully.
Findings of note

It was found that relative to booster behaviours, booster thoughts are a strength amongst students. These data show that students are relatively high in self-belief, value of schooling, and adopt a mastery and learning approach to their studies. However, work is needed to further translate these adaptive thoughts and orientations into adaptive behaviour in the form of greater study management, planning, monitoring, and persistence. Some strategies to do this are discussed below.

Anxiety is the highest of the guzzlers and this is consistent with findings elsewhere (Martin, 2001b, in review). In many respects, anxiety is a hallmark of the competitive education system Australia-wide. In this sense, then, at least some level of anxiety is unavoidable. Indeed, a certain level of anxiety is arousing and required for peak performance. However, excessive anxiety can be counterproductive and to the extent that this is the case, it needs to be reduced. This too is discussed below.

A dominant finding was that Year 7 students are higher than Year 9 students on all boosters. This is consistent with research elsewhere showing that students’ motivation can decline in the middle years of high school. Here and elsewhere younger high school students are markedly more positively oriented to their studies than their older counterparts in terms of their self-belief, focus on learning, value of school, planning, monitoring, study management, and persistence. This represents a significant window of opportunity through which to launch students into their middle schooling. The question, then, is what happens to students between Year 7 and Year 9? What is it about the demands placed upon students, their developmental level, how they are assessed, how teachers respond to them, the way curriculum is delivered, and life events that renders students significantly lower on all boosters by the end of Year 9? These questions are not unique to the ACT – they are relevant at a national level also.

Taken as a whole, girls are significantly higher than boys in learning focus, planning and monitoring, study management, and persistence. However, they are also significantly higher in anxiety. Boys are significantly higher in self-sabotage – a finding primarily evident in Year 7. These generally confirm data presented in the review of literature and provide a very clear insight into some of the factors that may be contributing to boys’ lower levels of achievement. Although girls score significantly higher in anxiety, it seems that this anxiety is played out through greater diligence and persistence than with withdrawal, underperformance, and failure acceptance.
Although self-belief and persistence are significantly correlated with literacy and achievement, they do not share as much variance with these outcomes as do the guzzlers low control, failure avoidance, and self-sabotage: These guzzlers play a markedly greater role in students’ literacy and numeracy than the boosters. It seems that in terms of core skills such as literacy and numeracy it is critical to address the maladaptive dimensions of students’ motivation. Interestingly, Martin (2001b) has shown that the boosters play a strong role in academic achievement (maths, English etc) and this may imply that some facets of motivation are more relevant to academic achievement while others are more relevant to core skills such as literacy and numeracy.

It is significant to note that although there are a number of marked mean-level differences between boys and girls on boosters and guzzlers, relationships between these facets of motivation and both literacy and numeracy are not markedly different between boys and girls. Hence, these boosters and guzzlers are equally important for boys and girls in contributing to their performance and underscore the importance and utility of addressing these boosters and guzzlers in ways that target both boys and girls.

It is interesting that ESL students score significantly higher than non-ESL students on a number of boosters. This is consistent with findings in previous work which shows more positive orientations towards education amongst students of non-English speaking backgrounds. For example, it has been found that young people from non-English speaking backgrounds are more likely to complete school and go into higher education (Marks & Ainley, 1999). It has been suggested that these students’ families may instill a greater valuing of education (consistent with high scores on value of schooling here). Also, there are some families who arrive in Australia with high standards of education and strong financial resources behind them. However, this is more the case for some immigrants than it is for others (and particularly compared to refugees) and for this reason, one should be very careful in generalising to the broader ESL population. Significantly, gender did not interact with ethnicity in the present study indicating that gender effects are consistent across ethnic and mainstream student groups.

Lower and middle SES students are significantly lower than upper SES students in control and higher in failure avoidance. This is broadly consistent with previous
research into the effects of SES, showing less adaptive educational outcomes for students from lower SES backgrounds (Ainley, 1998; Marks & Ainley, 1997; Teese, 1995). However, contrary to Teese (1995), gender effects on motivation are generally consistent across SES student groupings. As noted earlier, however, it is recommended that care be taken when generalising to SES groupings in the broader population.

Enhancing students’ motivation

At a meta-level, intervention designed to enhance students’ motivation involves improving students’ (a) approach to their schoolwork, (b) beliefs about themselves, (c) attitudes towards learning, achievement, and school, (d) study skills, and (e) reasons for learning. Also at a meta-level, intervention involves addressing (a) educators’ messages to students, (b) educators’ expectations for students, (c), how learning is structured and paced, (d) feedback to students on their work, and (e) classroom goals and assessment.

To enhance students’ motivation, however, we must move beyond the meta-level to address the specific ways in which motivation is enacted in students’ lives and in the classroom. The proposed model of motivation by Martin (2001b, in press) holds that educators are to do one or more of the following: keep high boosters high, keep low guzzlers low, increase low boosters, and reduce high guzzlers.

Keeping high boosters high and increasing low boosters

Self-belief is perhaps the most critical booster to develop in students. It is one of the strongest predictors of achievement and enjoyment at school (Bandura, 1986, 1997; Marsh, 1990; Martin & Debus, 1998). Developing students’ self-belief involves restructuring learning so as to maximise opportunities for success. Students’ experience of success increases their self-belief. Ways to structure learning along these lines include breaking schoolwork into components so that students can experience small successes along the way (thus building confidence and intrinsic motivation), perhaps individualising tasks so that challenges match students’ capacities, and expanding students’ views of success to include outcomes such as personal bests and improvement (Covington, 1992).

To build students’ self-belief educators must also challenge students’ negative thinking. Harnessing principles of cognitive behavioural therapy (Beck, 1976; Meichenbaum, 1974), educators can encourage students to challenge their negative
thinking through (a) observing their automatic thoughts when they receive a mark or are assigned schoolwork, (b) looking for the evidence that challenges their negative thinking habits, and (c) challenging these thoughts with this evidence.

Underpinning students’ value of schooling is the issue of relevance and meaning. Maximising the relevance and meaning of school requires educators to link what is taught with world events, students’ lives or interests, what they may do when they leave school, and perhaps what they learn in other school subjects. In doing this, students see the relevance, utility, and importance of what they learn – this builds a value of schooling. Value of schooling is also developed by showing how school not only teaches students facts but also teaches them how to think and analyse and that these help them in many walks of life including their social and personal lives, in the workplace, and on the sporting field. A value of schooling is also enhanced when educators are role models showing that they value what they are teaching (McInerney, 2000).

Motivation orientation theory (Nicholls, 1989) provides guidance in promoting students’ learning focus, persistence, study management, and planning and monitoring. Enhancing students’ motivation in these respects essentially involves promoting a focus on mastery (Nicholls, 1989; Qin, Johnson, & Johnson, 1995). In practical terms, this is achieved by showing students how effort and strategy are key means of improvement and accomplishment (Craven, Marsh & Debus, 1991; Martin et al, 2001b), encouraging students to set goals and showing them how to work towards these, making it clear to students how to break schoolwork into components, plan how to do each component, how to review their progress, and overcome obstacles they may experience in working towards their goals (McInerney, 2000). In essence, these strategies encourage students to focus on the task at hand and this reduces cognitive interference in the form of concern (or fear) about how they are being evaluated or their performance relative to other students in the class.
Enhancing motivation boosters involves: promoting success in the classroom, reworking students’ notions of success to encompass such elements as improvement and personal bests, challenging students’ negative thinking, promoting a focus on mastery rather than excessive competitiveness, and contextualising students’ learning into their lives and interests, their future pathways, the world more generally, and their other school subjects.

**Keeping low guzzlers low and reducing high guzzlers**

A perception of low control over outcomes underpins much maladaptive motivation in students’ academic lives (Covington, 1992; Martin et al, 2001b). Students who believe they have little control over maintaining success or avoiding failure are at risk of counterproductive manoeuvring in the form of self-sabotage or even helplessness (Martin et al, 2001a, 2001b, in press). Students develop a sense of control when they see the connection between their effort and strategy and academic outcomes. Ways to build students’ sense of control include showing them how hard work and effective study strategies impact on achievement, reviewing study skills in class, and giving students some choice (within sensible parameters) over lesson objectives, assessment tasks, criteria for marking, and due dates for assignments (McInerney, 2000).

Other ways to build control involve providing feedback in effective and consistent ways. This requires teachers to provide task-based feedback on students’ work that makes it very clear how they can improve (Craven et al, 1991; Martin et al, 2001b). It also requires teachers administering rewards (or punishment) that are directly contingent on what students do – often inconsistent reward contingencies create confusion and uncertainty in students’ minds as to what they did to receive that reward (Thompson, 1994).

Strategies to deal with failure avoidance, anxiety, and self-sabotage are underpinned by need achievement and self-worth motivation theories (Atkinson 1957; Covington, 1992; McClelland, 1965). We are able to draw on these theories to show students how to address motivational gaps and sustain motivational strengths. The primary
factor that underpins these three guzzlers is a fear of failure (Covington, 1992). To reduce these guzzlers in students’ lives, then, requires that students’ fear of failure is addressed.

Ways to reduce students’ fear of failure include promoting a classroom climate of cooperation, self-improvement, and personal bests (Qin et al., 1995), showing that mistakes can be a springboard for success and do not reflect on students’ worth as a person (Covington, 1992), and repositioning success so that it is seen more in terms of personal progress and improvement than outperforming others (Covington, 1992).

Reducing anxiety, avoidance, and self-sabotage is also achieved by enhancing students’ control as discussed above (Martin et al., 2001b). Addressing these guzzlers is essentially about assisting students towards success orientation and away from failure avoidance or failure acceptance. Doing this requires educators to build success into students’ lives as much as is feasible. Two ways to do this is to rework the definition of success so that it encompasses improvement and personal progress (which is attainable by every student) and also to break tasks into smaller components to maximise opportunities for success along the way (McInerney, 2000); a greater sense of self-belief for the next task increases the likelihood that the student will meet with success on it.

Reducing guzzlers involves enhancing students’ sense of control through a focus on their effort and strategy, giving them choices over lesson objectives and assessment tasks and criteria, and providing effective and consistent feedback based soundly on students’ work. It also involves addressing students’ fear of failure through developing a class and school climate of cooperation, allowing students to make and learn from mistakes, and showing students that their worth as a person is independent of their academic achievement.

**Drawing rather than driving students**

Covington (1992) has defined students in terms of those that are drawn to success and those who are driven to avoid failure. Our aim as educators is to create learning environments in which students are drawn rather than driven. Covington and Roberts
(1994) argue that the very nature and bases of learning must be changed so that motives become goals and draw rather than drive the student (see also Covington, 1992). Such a program would encourage students to gain knowledge for mastery’s sake rather than for the sake of performance, encourage students to serve the interests of the group, and to give expression to their creativity and curiosity.

Changing the reward system has also been proposed as a way in which the purpose of learning can be altered. Covington and Roberts suggest that reward should be based on students meeting personal standards more than outperforming others. In a sense, then, the student is encouraged to become success oriented rather than failure avoiding or failure accepting. When students are success oriented they are then in a stronger position to learn and as Covington and Roberts note, perform well in high-pressure or competitive scenarios (see also Elliot & Harackiewicz, 1994; Epstein & Harackiewicz, 1992; Harackiewicz & Elliot, 1993; Harackiewicz & Manderlink, 1984). The precise means by which these pedagogical recommendations are put into practice need careful consideration. For example, students’ performance standards should increase along with their aspirations and so there always exists a challenge to be surmounted (Covington & Beery, 1976). This could involve encouraging students to view their education in terms of ‘personal bests’ much along the lines of sportspeople at even the most elite levels.

**Academic Resilience**

It may be, however, that an energy and drive to learn, work effectively, and achieve to one’s potential is not sufficient to deal with academic setbacks or excessive study pressure and stress. Without some level of resilience to these types of adversities, the motivated student’s gains may well be lost. This issue of resilience brings into consideration a number of questions. Why are some (often motivated) students debilitated by setbacks, poor performance, stress, and study pressure while others pick themselves up, recover, and move on? Why do some students get caught in a downward spiral of underachievement while others respond proactively to poor performance and break this downward spiral? Why do some students crumble under the pressure of school while others are energised and embrace the challenges before them?

One suggestion by Martin (2001b, in press) is that the answer lies in academic resilience. In a general sense, resilience has been defined as the process of, capacity
for, or outcome of successful adaptation despite challenging or threatening circumstances (Howard & Johnson, 2000).

In the academic context, resilience is defined as students’ ability to deal effectively with academic setbacks, stress, and study pressure. Surprisingly, academic resilience has not received a great deal of attention in the research literature. In the few papers that do deal with the issue, most are focused on ethnic minority groups and extreme underachievers (e.g. Catterall, 1998; Finn & Rock, 1997; Gonzalez & Padilla, 1997; Overstreet & Braun, 1999).

However, it is argued here that academic resilience is relevant to all students. This is because at some stage in every student’s school life, he or she will experience some level of poor performance or stress or pressure that must be dealt with. The question is whether this student deals with it in a proactive and adaptive fashion or whether he or she deals with it counterproductively or not at all. For a large part, we cannot eliminate setback from students’ lives, and for better or for worse, stress and pressure are a reality of our competitive school system. Essentially, students are stuck with the constant possibility of setback, stress, and pressure. The question lies in how students deal with these.

Although there has not been a great deal of research on academic resilience, there has been substantial focus on resilience in terms of broader life events (e.g. resilience to disadvantaged backgrounds, poor parenting, family break-up, mental illness, drug addiction etc.) in Australia (Fuller, 2000; National Crime Prevention, 1999; Shochet & Osgarby, 1999) and overseas (Davis & Paster, 2000; Gilligan, 1999; Lindstroem, 2001; Luthar & Cicchetti, 2000; Luthar, Cicchetti, & Becker, 2000; Masten, 2001; Slap, 2001). This research has shown that resilient young people have a number of protective factors in their lives. Protective factors (a) reduce the impact of negative events, (b) help individuals avoid or resist problematic pathways, and (c) promote positive and successful pathways.

School is an important place where resilience in young people can be enhanced (Cunningham, Brandon, & Frydenberg, 1999; Frydenberg, 1999; Fuller, 2001; Fuller, McGraw, & Goodyear, 1999; Howard & Johnson, 2000; Longaretti, 2001; Parker & Hendy, 2001; Speirs & Martin, 1999). However, studies of resilience as it pertains to school are still couched in terms of a young person’s mental health and wellbeing and not in terms of their academic development.
If we are to pursue academic resilience along the same lines as the larger body of research into general resilience, we can propose that enhancing academic resilience requires us to enhance the protective factors in students’ lives and reduce the risk factors. In the school setting, it is proposed that there are a number of student-level protective and risk factors that contribute to academic resilience and that these are boosters and guzzlers respectively.

Through the evidence and theory discussed above, it can be inferred that students high on boosters and low on guzzlers are resilient to academic setback and deal with schoolwork pressures and stress effectively. Students low on boosters and high on guzzlers are not so resilient to academic setback and do not deal with schoolwork pressures and stress so effectively. If this is the case, it follows that the educational strategies described above aimed at increasing boosters and reducing guzzlers, also apply to academic resilience.

Academic resilience is introduced as a concept reflecting students’ ability to overcome setback and challenge and effectively deal with pressure and stress in the school setting. It is proposed that the well-rounded student is one who is energised and motivated to achieve but is also resilient when the going gets tough. Research has shown that resilient young people have a number of protective factors in their lives and relatively few risk factors. In the academic domain it is proposed that academic resilience is developed through promoting protective factors (the motivation boosters described above) and reducing the risk factors (the motivation guzzlers described above).
PART 3. A FRAMEWORK FOR ACTION

Taken together, the evidence presented in Parts 1 and 2 identify areas for action at student-, class-, and school-levels. It also provides direction for the relative emphases to be given at each of these levels and the specific factors within them that are likely to yield improved outcomes not only for boys but for all students.

Figure 3 presents a framework that draws this work together.

Of course, the emphasis given to each level of action as well as the strategies and factors within each level will vary from school to school. Each school has a different culture, student body, and staff profile and it is the staff and students at each school that should determine which of the many options for action should be a focus of the school.

To guide schools in prioritising which courses of action to take, Figure 3 also provides approximate values of the percentage of variance in student achievement explained by each level. Clearly, action at the teacher and class level will yield most effect in student achievement, followed closely by student-level action, and then school-level action. Importantly, this is not to diminish the value of school-level action because not only is school-level action crucial in its own right but it also feeds directly into class teaching and student-level activity.
Improving Educational Outcomes of Boys – Interim Report

Figure 3. Framework for action and relative contribution of each level of action to student achievement

**SCHOOL-LEVEL ACTION**
(5-10% OF ACHIEVEMENT)

- Promoting and enacting gender equity
- Student input to policy and procedures
- Dealing with diversity
- Promoting success at every opportunity
- Providing effective feedback to students
- Mentoring

**CLASS/TEACHER-LEVEL ACTION**
(50-60% OF ACHIEVEMENT)

- Developing pedagogical leadership roles
- Tackling anti-academic culture
- Developing good relationships with students
- Broader assessment
- Role modelling

- Linking outside school (VET, community, industry)
- Addressing gender construction across curriculum
- Accommodating student perspectives
- Goal and target setting
- Building student skills and competencies

- Positioning as a learning organisation
- Addressing gender construction across curriculum
- Recognising and creating learning windows
- Addressing negative peer influence

**STUDENT-LEVEL ACTION**
(30-40% OF ACHIEVEMENT)

- Positioning as a learning organisation
- Addressing gender construction across curriculum
- Recognising and creating learning windows
- Addressing negative peer influence
- Specific student-centred programs
- Addressing relevant parent/home factors
- Building student skills and competencies
- Dr Andrew Martin
  AJ Martin Research

**MOTIVATION**

- Increase:
  - Self-belief
  - Value of schooling
  - Persistence
  - Planning/monitoring
  - Study management

- Reduce:
  - Anxiety
  - Failure avoidance
  - Self-sabotage
  - Low control

**LITERACY**

- Address:
  - Book selection
  - Book aversion
  - ‘Tricks’ of literacy
  - School reading culture
  - Promoting and resourcing the library
  - Across the curriculum

**ICT**

- Address:
  - Across curriculum
  - Professional development of teachers
  - Access issues

93
PART 4. REFERENCES


ACT Department of Training and Children’s, Youth and Family Services Bureau (1997). *The across curriculum perspective statements*. Canberra: ACT DECS.


Secondary Heads Association.


Improving Educational Outcomes of Boys – Interim Report


Keys Young (2000). *Young people in transition*. Report to DETYA.


