THE CHANGING CLASSROOM AND SCHOOL ENVIRONMENTS AS A SINGLE-SEX BOYS' SCHOOL UNDERGOES THE TRANSITION TO COEDUCATION

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A thesis submitted as a partial requirement for the degree of Master of Education, at the University of Canterbury, Christchurch, New Zealand

February 1993
ABSTRACT

In order to test conflicting research findings about the effects of coeducational versus single-sex schooling, F5, F6 and F7 students of a single-sex boys' school assessed their classroom and school environments before and after their senior school's transition to coeducation. Data gathered in 1991 and 1992 from the administration of the Classroom and School Environment Survey developed by the author indicated a drop in student attitude towards classroom system maintenance (order, organisation, rule clarity, teacher control and innovation) after the transition to coeducation. However results showed clearly that attitudes students held to classroom atmosphere and their school environment characteristics (school facilities, school relationships and school emphasis) improved significantly in the coeducation situation while other characteristics (classroom goal orientation and interpersonal relationships) showed little or no improvement at all. The results of this study tended to support other research findings where differences favouring single-sex over coeducational classrooms were greatest in their respective authority structure. Overall the evidence gathered in this study indicated a better social and emotional climate in this school's new coeducational setting.
ACKNOWLEDGEMENTS

I would like to thank Alison Gilmore and David Hughes for their valuable suggestions and time spent in supervising this research study as it was in progress in 1992.

I would also like to thank my wife, Lynda, for her tolerance and wholehearted support while this study was conducted and written up.
"The move to coeducation has been a most successful one, especially for the more senior years when students are usually past the "infatuation" stage. It certainly was a joy to teach mixed classes in English where the girls' perception and responses to literature did much for their male counterparts."

John Turnbull  
Deputy Headmaster  
Knox Grammar School, Sydney  
(On exchange at Fettes College)

"When girls were first introduced at my school, a moderately tough (demanding) British Public school, there were about 20 in the 6th and 7th forms, increasing in number eventually to make up half of those top two years. They proved a great success at this level, preparing boys for the completely co-ed university life. Boys became socially civilised and were made aware of the girls' equal academic capabilities - many girls being more than capable of the boys, providing a very effective new dimension of competition which brought about better results (after all - how many boys like to be beaten by a girl?)"

Tom Usher  
March 1897

J.S. Taylor responding to the statement, made to him by the St Matthews Schools' Trust Board (Masterton; 1980), "Discipline will go to the dogs" (if Rathkeale and St Matthew's become coeducational schools). "Discipline systems which have been used to maintain standards within the rather more artificial nature of a single-sex environment will not be as greatly needed, as a lot of immature behaviour will disappear, especially at senior levels, because of the greater naturalness of the situation with girls present".
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1. Introduction

1.1 Background

In July 1986 the Rector of St Andrew's College, through the school's Academic Committee, proposed a motion for approval to the Board of Governors that "the enrolment of girls at the 6th and 7th form level of the school be allowed to occur from the beginning of term one, 1988".

This was the culmination of four years of administrative restructure, staff changes, and the addition of new subjects and resources to the curriculum under the leadership of the Rector, Dr. John Rentoul. As the consequence of more rigorous teaching and closer monitoring of pupil performance demanded by him academic standards had steadily improved.

However the overall success in examination classes still concerned the Rector. In the early 1970's St Andrew's College attracted pupils who were less academically able than the average student. This was the result of a well developed remedial department with a good reputation of success with juniors. Nevertheless, there was still the problem of student retention and exam success with senior students. In the mid 1980's the new Rector encouraged the admission of overseas students in an attempt to increase the numbers at the senior level.

More and more the Rector recognised the need to improve the educational environment of the senior school. The Rector was well aware of the single-sex versus coeducation issue and was quite convinced that coeducation stimulated a broader teaching base that allowed students to develop mutual respect and the social skills they normally would not get at a single-sex school. As well, there was a real market niche in Christchurch for a private co-ed Senior College (all other private schools were single-sex). With the admission of girls to the senior school the Rector also felt there would be an improvement in academic achievement.
As one could imagine the proposal of July 1986 was a bomb shell that ignited heated debate. No decision was forthcoming from the meeting and in the ensuing months the proposal was leaked to the press and became public knowledge. This was much to the displeasure of Rangi Ruru and St Margaret's schools who had not been consulted and ultimately would be directly affected. There was also a huge hue and cry from the Old Boys Association and many of the parents. The debate boiled on, dividing and polarising the College community.

The Board finally agreed in 1987 to allow entry of girls into the Junior School at the beginning of 1990. This was a far cry from the original proposal. The issue of allowing girls into the 6th and 7th form remained unresolved for the time being.

The Rector continued spearheading the need for change backed by his staff. The Board continued to dig in its heals and Board meetings became increasingly confrontational. At every public opportunity Dr. Rentoul promoted the benefits of coeducation and the concept of a Senior College. He was quick to criticise low retention rates in senior secondary classes nationally and blamed this on the inability of schools to cater specifically to senior students needs. In the winter of 1988 the Rector took sabbatical overseas and personally visited many schools that had functioning Senior Colleges. He returned even more convinced that the change to coeducation was right for St Andrew's.

The Board and the Rector continued to lock horns over the issue of girls. Concerned groups in favour of girls entering the College, such as the P.T.A. and the staff, became increasingly vocal over the issue. Their beliefs were passed on to Board members. The pressure mounted on the Old Guard and those adamantly opposed to the move.

At the end of term one, 1990, a tense "Extraordinary General Meeting" was held and motions were passed demanding changes to the Board's constitution and condemnation of Board members who had been trying to remove the Rector from
his position. There was undivided support given to the Rector and his ideas at the meeting. This was the turning point for those in favour of the Rector's ideas. The blocks of resistance were removed during the remainder of the year. The Board and its membership were reviewed and many of those who opposed to the change were not re-elected. Finally in November of 1990 the Board approved the concept of a Senior College and coeducation.

During 1991 the new eye-catching Senior College was erected and completed. The architecturally designed building had a large student common room complete with Sky T.V., plush fittings and furniture. A number of tutorial rooms, lecture theatres, study areas, locker bays, Deans and administration offices and a cafeteria were also contained in it. It was opened at the beginning of 1992 by the Governor-General, Dame Catherine Tizzard, with a role of just on three hundred 6th and 7th form students, of which fifty were senior girls. The change to coeducation was off to a flying start.

1.2 Study Objectives

The analysis of the transition to coeducation presented an ideal opportunity for a research study towards the completion of a Master of Education programme at Canterbury University. Here was the chance to assess and evaluate the changes to classroom and school characteristics as females were admitted to school. Prior research into the differences between co-ed and single-sex schools generally showed that single-sex schooling emphasised achievement, discipline and control; while coeducation placed more importance on student social development and the provision for a happy and co-operative learning environment. From senior students' perspective of St Andrew's College, would coeducation provide a happier and more co-operative learning environment? And ultimately would the new co-ed situation be one that provided better academic and social outcomes?

In order to answer these study objectives it was crucial to get some baseline data
before the transition to co-ed. That first meant establishing classroom and school environment characteristics and then developing an appropriate survey that measured those characteristics.

The classroom environment is a complex mix of student-student interactions and student-teacher relationships. How co-operative students are in the classroom with each other and with the teacher and how well the teacher gets along with the class often establishes the type of classroom environment. The environment may range from an unfriendly, authoritarian and over controlled classroom where there is little student-student interaction to one that allows ample group work with little need for discipline and tends to have a happy and friendly environment.

The school type, and school environment to a lesser extent, affects what goes on in the classroom. School policy sets the emphasis for learning in the classroom. Demanding strict adherence to rules and regulations, discipline and conduct, punishments etc. from staff and pupils sets the tone of the classroom.

The school environment, what occurs outside of the classroom, is also dependent on student-student and student-teacher relationships. The power wielded by prefects over others or the amount of bullying in the school grounds all contribute to student happiness. Students whose coaches are teachers may see a more human side to them (and vice versa) thus affecting their relationship in the classroom. At the same time poor student facilities or the lack of adequate activities also affect a student's attitude to school. The consequences of all the interactions both within and outside the classroom combine to provide a unique school environment.

As a research topic for Education 654, Tests and Measurements in 1991, a survey was designed that measured what was considered to be the pertinent characteristics of the classroom and school environments of St Andrew's College (A considerable amount of time and energy was used in coming up with an appropriate survey and greater details of the survey can be found in Chapter 3 on the Development of the
Classroom and School Environment Questionnaire).

This survey was completed in the winter of 1991 by 221 F5, F6 and F7 students, scored and analysed as part of the research topic for Tests and Measurements. The baselines on all classroom and school characteristics were now established and were used in this comparative research study on the transition to coeducation.

Two major comparisons with the 1991 baseline data were analysed in this study. The first comparison was with the results of an expectation form of the survey which was completed by students, but not scored or analysed, in 1991. This form asked students what their expectations were for their classroom and school environments with the prospect of girls present in the following year, 1992. Identical survey items were used. The second comparison was with the actual 1992 classroom and school environments. The survey was administered, scored and analysed during the winter of 1992. Again this survey had identical items to the original. (For simplicity purposes, the original 1991 survey is called Survey A, the expectation form, Survey B and the 1992 survey, Survey C).

Finally the study sets out to determine through comparison whether the 1992 classroom and school environments lived up to 1991 student expectations.

2. Review of Literature

The trend away from single-sex education towards coeducation began in the 1960s and 1970s led by the input of researchers such as Sutherland (1961); Campbell (1969); Dale (1969,1971,1974); Miller & Dale (1974) and Feather (1974,1975).

Other early researchers presented information warning of the dangers and pitfalls associated with coeducation (Coleman, 1961; Jones, Shallcrass and Dennis, 1972; Horner, 1974; Ormerod, 1975).
In the mid to late 1980s social, economic (Jones, 1989) and administrative reasons (Deem, 1984) were used to justify the movement towards coeducation while, increasingly, single-sex education was viewed as a barrier to successful adolescent socialisation. Many educationalists purported that coeducation was necessary for young people to take their place naturally in the world of men and women. This was argued strongly for by researchers such as Marsh (1989); Schneider, Coutts and Star (1988); Stables (1990); Harris (1986) and Jones, Kyle & Black (1987).

Other researchers, including Lee and Bryk (1989); Cairns (1990); Foon (1988) and Burgess (1990) provided evidence that coeducation encouraged subject polarisation between gender and generally disadvantaged female students.

2.1 What makes a good school?

Before looking more closely at the literature for and against coeducation it would serve a useful purpose to identify the characteristics of a good school as seen by different groups of people.

Charlton, Jones and Ogilvie (1989) studied British primary and secondary school teachers perceptions of what they thought were the qualities of a good school. Initially 133 teachers identified 513 characteristics of a good school which the authors then condensed to 18 items. A further 236 teachers then ranked these 18 items according to their importance. Three aspects emerged from the study. A good school had an organization and curriculum that matched pupil needs. Secondly a good school had a well motivated staff and thirdly, a good school had sensitive and supportive leadership.

From a student's point of view, a good school creates a relationship between those learning strategies likely to lead to high quality learning outcomes. Students prefer classrooms to be enjoyable and oriented to independent study and competition (Branwhite, 1988; Hattie & Watkins, 1988).
Parents, it seems, have different views from students. Hunter (1991) surveyed 289 parents in England and found that the essential attributes of a good school were: providing good discipline, well behaved pupils, an emphasis on successful exam results and a preference for a single-sex environment.

These three viewpoints all had a different emphasis on the attributes of a good school. Teachers were most concerned about curriculum and staffing while parents emphasised discipline, order and results (single-sex schools). Students were more concerned with the socialisation process that goes on at school as well as outcomes (coeducation).

These latter two viewpoints (students and parents) mirror the arguments for and against coeducation.

2.2 Evidence in Favour of Coeducation

The findings from a number of investigations and studies primarily centre their cases for coeducation around four main headings. They are: social advantages, positive student attitudes, higher self-concepts and better academic outcomes.

(i) Social Advantages

Much of the early research in favour of coeducation revolved around Dale's (1969,1971,1974) definitive three volume study on mixed and single-sex schools in England. His study provided ample data and information and served as a cornerstone for future studies.

The major focus of Dale's research centred on student satisfaction and social relations. Generally he found that co-ed schools were preferred by students and teachers, had more congenial atmospheres and had teachers who were more friendly and helpful.
Dale also found that single-sex schools tended to emphasize control and discipline to a greater extent than co-ed schools. This appeared to agree with the observations of Campbell (1969) in a study of attitudes and self-concepts at three schools. As a result of the emphasis on discipline, girls were found to regard their single-sex school in a more hostile light than girls of co-ed schools.

Feather (1974, 1975) surveyed British boys and girls from two senior classes in eight co-ed and single-sex schools on their happiness with their school. Each student also ranked in order of importance a set of values; world at peace, freedom, equality, friendship, self-respect, excitement and happiness. Finally these values were then ranked by the students in importance as they thought their school would rank the values.

Co-ed schools were, on the whole, happier environments for students. Co-ed boys tended to be more positive towards their classmates and teachers than boys in single-sex schools. Students tended to rank values in much the same way as they perceived their school would. There was no difference in the rank order of values between school types. Friendship and happiness were seen as the most important values.

In the same study student satisfaction was determined using a modified Cornell Job Description Index (Smith, Kendall and Hulin, 1969). The index was based on a check list of word items describing school and fellow pupils. Feather found a positive relationship between school satisfaction and happiness (co-ed schools rated higher in satisfaction than single-sex schools).

To summarise, early researchers produced evidence showing co-ed schools had more satisfying and happier environments than single-sex schools.
(ii) Student Attitudes

Marsh (1989) examined the effects of school type and gender and their interaction on achievements, attitudes and behaviours of 2,332 Catholic high school students. The focus of his investigation was to determine if gender attitudes were attributable to school type.

The data from the 2,332 Catholic students came from a much larger study (called the High School and Beyond study, HSB) of 58,270 high school sophomores (second year) and seniors from 1,015 private and public schools in the United States (Coleman, Hoffer and Kilgore, 1982). Students completed questionnaires on their demographics, attitudes to work, self-concept and postsecondary aspirations and were also tested on their mathematical, vocabulary and reading abilities. In the original study three different types of analysis were used to control differences in student input, to separate selection effects and to estimate sophomore-to-senior growth in attitude. In the original study results provided evidence for higher achievement in vocabulary and mathematics in Private and Catholic schools than in public schools. Achievement was significantly higher where school policy emphasised discipline, student behaviour and homework completion.

The interpretation and analysis of the wealth of data generated in the HSB study was to be controversial. Marsh found many significant differences between Catholic single-sex students and Catholic co-ed students based on achievement scores, courses taken and student attitudes. In general these differences favoured single-sex students, particularly boys. However, Marsh argued that many of these differences were not due to school-type effects. He purported that when outcomes were controlled for student background in the statistical design almost no school-type effects were significant. This lack of effect was similar for both girls and boys, thus sex differences were largely unaffected by school type.

Using the same data as Marsh did in his study Lee and Bryk (1986) drew quite
different conclusions using a different statistical design than that of Marsh. They argued that all the statistically significant single-sex school effects were positive. Single-sex schools delivered specific advantages in academic achievement, self-image, sex role stereotyping and attitudes to academics. This was especially so for girls' schools.

Herein lay the school-type quandary. By using different statistical methods for controlling for preexisting student academic abilities in order to compare co-ed and single-sex schools and often using different statistical tests, researchers have come up with opposing views on the superiority of one school type over another.

In 1982, 2,029 Canadian high school students were evaluated on their attitudes towards their school (Schneider and Coutts, 1982). Five co-ed, 4 girls-only and 4 boys-only schools were sampled using the High School Characteristics Index (Stern, 1970). The study set out to evaluate whether co-ed schools would place (a) less emphasis on academic achievement (b) greater emphasis on student affiliation and nonacademic activities and (c) less emphasis on control and discipline.

Evidence supporting the latter two hypotheses was obtained. However, no definite conclusion could be drawn for the first hypothesis. The results showed that co-ed schools provided a more enjoyable environment without the same degree of control and discipline found in single-sex schools.

Harris (1986), in a study of coeducation and sex roles, surveyed first term Australian university students on attitudes towards sex role, high school, relations with others and opinions of themselves. Results showed a lack of significant differences in sex-role stereotyping between students from the two types of schools. Students felt that coeducation led to a more natural attitude towards the opposite sex. There appeared to no social benefits as a result of single-sex education.
A study of Welsh third year pupils in seven co-ed and six single-sex schools concluded that girls in co-ed schools were more positive towards school than girls in single-sex schools (Stables, 1990).

Researchers, then, cite more positive attitudes towards the opposite sex, school and relationships, as some of the consequences of attending co-ed schools.

(iii) Self-Concept

Herbert Marsh (along with Owens, M. Marsh & Smith, 1989) conducted a number of studies comparing and contrasting various school types. Student self-concept was measured for all students in grades 7-12 (in Australia) in each of four years as two single-sex high schools were reorganised to form two coeducational schools. The four years consisted of Year 1 (pretransition), Year 2 and 3 (transition) and Year 4 (posttransition). In Year 2 only grades 7, 9 and 11 became coed while grades 8 and 10 remained single-sex classes. In Year 3 grades 8, 10 and 12 also became coed classes.

According to Marsh there are eleven scales of self-concept. They are General Self, Mathematical Self Concept and Verbal Self Concept, General School, Physical Ability, Physical Appearance, Relations With Same-Sex Peers, Relations With Opposite-Sex Peers, Relations With Parents, Honesty and Emotional Stability. These self-concept factors were related to sex and age.

The study set out to determine whether students attending single-sex schools had systematically different self-concepts than students of co-ed schools and whether sex differences in self-concept varied between school types.

Across all facets of self-concept, scores were higher for students attending co-ed classes than for those in single-sex classes. This difference applied to both girls and boys. On seven of the eleven scales a significant positive difference was found
between pre and post transition to coeducation. For verbal self-concept, girls had a significantly higher score than boys (both pre and post transition) while for mathematical self concept, relations with parents, relations with opposite sexes and honesty no significant differences were noted.

Marsh also found that in Year 2 coed grades 7, 9 and 11 had lower self-concept scores than those grades had in Year 1. This appeared to be a temporary negative effect which disappeared in the posttransition years for these grades.

One of the important strengths of Marsh's study was that it was conducted in the same schools over four years. Most previous studies have had the difficulty of equivalence to overcome. Students who choose to attend single-sex schools tended to be different in socioeconomic status, academic ability and academic motivation than students who choose a co-ed school.

As a result, Marsh (1991) had a word of caution for all empirical research comparing coeducation and single-sex education. Without taking into consideration pre-existing student differences (background differences) interpretation of any study results of school-type differences must be viewed cautiously.

In a later study Schneider, Coutts and Starr (1988) found that co-ed students had more positive self-concepts towards academic ability and had a stronger preference for the school type they enrolled in. Partial support was found for a more positive student attitude towards teachers and school in a co-ed setting.

Year 9, 10 and 11 students from five schools in New South Wales were interviewed by questionnaire on the their reaction to change of school type (Jones, Kyle and Black, 1987). Four main reasons for favouring coeducation emerged. These were social interest, competition, school life quality and a greater subject choice. Many students felt that coeducation allowed for greater confidence building, a happier atmosphere and a more natural environment that provides for better understanding
between the sexes.

Proponents of coeducation generally view its environment as one that promotes improved self-concept and self-esteem.

(iv) Academic Outcomes

Early observations pointed to improved, or at least not harmed, academic outcomes for co-ed students. As early as 1961, research done by Sutherland in a study of Irish students found co-ed boys gained greater success in academic achievement than boys from single-sex schools.

Dale (1974) found that the social benefits of coeducation were not at the expense of academic progress. Indeed, "the progress of boys is probably improved by coeducation while that of girls is not harmed" (p.267).

In comparing the degree results of university students from co-ed and single-sex secondary schools, researchers Miller and Dale (1974) found similar degree results irrespective of school background. However they noted that there were more first year dropouts from students with a single-sex school background suggesting that a lack of socialisation at the secondary level led to possible failure at tertiary studies.

In his longitudinal study, Marsh (1989) found that the amalgamation of two single-sex schools into a co-ed one had little or no effect on student achievement in Mathematics and English. Improved self-concept was not found to be at the expense of academic progress.

Hugh Lauder and David Hughes (1990, 1991, 1992) along with other researchers have looked closely at the outcomes of success of secondary school and university students and related these to their high school background.
In an investigation of 20 Christchurch schools Lauder and Hughes (1990) set out to find out, among other things, to what extent the type of school influenced academic success (School Certificate, Sixth Form Certificate etc.). Furthermore, was a school's rate of academic success related to student socioeconomic status (SES), measured ability and the school's SES mix?

The raw score results indicated that private protestant (single-sex) schools obtained the highest academic means and co-ed state schools the lowest. However, after controlling for student background (SES and measured ability), these outcomes were substantially reduced. They suggested that it was not so much the school type that affects student outcomes but rather the school's mix. Their results were later confirmed in a separate investigation of fourteen of the original twenty schools (Lauder, Hughes and Fitzgerald, 1992).

In examining university results Hughes, Lauder and Strathdee (1991) postulated that if a student's secondary school background had superior teachers who taught the necessary study skills then this would be reflected in enhanced university achievement. However, on the other hand, if prior secondary school academic success was due to school mix only then achievement success at university may decrease.

The evidence gathered in the investigation indicated that independent single-sex schools students did less well than expected. Co-ed students, on the other hand, performed better than expected implying that it is a school's mix which influenced academic outcomes.

The overall evidence provided by researchers generally point to reasons other than school type for academic success. When these are taken into account the case favouring the academic outcomes of single-sex schools appeared not as strong.
2.3 Evidence in Favour of Single-sex Education

In the early 1960s Coleman (1961) sounded warning bells for the trend away from single-sex education and towards coeducation. "Coeducation may be inimical to both academic and social adjustment" (p.51).

Since then a number of researchers have provided evidence under various headings undermining the case for coeducation. A fear of success syndrome for girls, subject polarisation and sex stereotyping in co-ed situations point to the negative aspects of coeducation while superior academic outcomes, social development and better self-concepts point to the advantages of single-sex education.

(i) The Fear of Success

Horner (1974) found the motive to avoid success was increased in females who were forced to compete with males suggesting coeducation is detrimental to female performance. The Carnegie Commission of 1973 commented that in women's only colleges students were not reluctant to participate actively in class discussion. In coeducational classes the fear of losing their feminine appeal inhibits girls from vocal participation. Therefore, in a girls only school, they had far greater opportunity to gain experience in leadership roles, organization etc.

In a study of the fear of success involving 250 high school senior students, Winchel, Fenner and Shaver (1974) obtained results that confirmed Horner's claim. Analysis of a 'fear of success' measure indicated that girls who attended a co-ed school would be disadvantaged by a fear of success belief.

(ii) Subject Polarisation

Winchel et al. also found that one of the outcomes of attending a co-ed school was a greater degree of subject polarisation. Girls tended to shy away from subjects that
were viewed as 'traditionally' male.

Ormerod (1975) examined subject choice among 1200 pupils in 19 secondary schools. Results indicated that polarisation in subject choice was more evident in coeducational schools where girls tended to take subjects other than the sciences and mathematics. This wasn't the case with girls in single-sex girls schools.

A number of recent researchers have obtained data supporting Winchel, Fenner and Shaver's (1974) earlier claim that coeducation created subject polarization. More girls tended to take mathematics and physics in single-sex schools than they did in co-ed schools (Stables, 1990; Burgess, 1990; Harvey, 1984; Hamilton, 1985; Vockell & Lebonc, 1981). Co-ed girls showed a deceleration in science achievement relative to their male peers (Finn, 1980). Students of co-ed schools had more traditional subject preferences and schools did little to change the status quo (Foon, 1988).

(iii) Sex-Stereotyping

Much of the recent argument against coeducation centres around the sex-stereotyping of young women. Dale Spender (1982) insists that only in "single-sex classrooms can girls be free of male domination and the message that women are passive and second rate". Not only was co-ed organized and suited for the needs of boys it was also (for the most part) run by role models who were men (Burgess, 1990). In the co-ed setting it was not so much the learning of the girls that was impaired, but the lessons boys and girls learnt about gender relations.

Research in classroom environment pointed out that boys were the ones favoured with attention. According to Stanworth (1981) boys were; twice as likely to be asked questions by teachers, twice as likely to be regarded by teachers as highly conscientious and twice as likely to be those with whom teachers get on best. In addition, boys were three times more likely be praised and five times more likely to
be the ones to whom teachers pay the most attention. In her study she found boys twice as likely to demand attention but on the other hand twice as likely to be seen as model pupils.

(iv) Academic Outcomes

In a study of 1225 New Zealand third and fourth form students, Jones, Shallcrass and Dennis (1972) found significant differences in beliefs between students of single-sex schools and students of the same sex in a co-ed setting. Schools chosen were similar in curricula, student regimentation and attitudes and values of teachers, administrators and parents.

Beliefs surveyed included attitudes to scholarship, prestige and popularity, self regard, peer influence on behaviour and personal goals. Allowing for backgrounds, the results of the study indicated that single-sex schools were viewed by students as both more academically orientated and satisfying whereas co-ed schools tended to be more socially oriented. Perhaps more importantly, the two types of schools did not differ in self regard.

Jones, Shallcrass and Dennis also advocated that much of the appeal of coeducation relied on student popularity (rather than scholastic achievement) and its emphasis on "rating and dating".

Burgess (1990) warned of the dangers of limited entry of girls to single-sex boys schools. Burgess contended that these schools that have a limited number of females do so in order to raise the level of achievement and not to change the real ethos of their schools. She purported that the proponents of coeducation were mainly men and all the advantages of coeducation went to the male student.
(v) Social Advantages

Richardson (1990), using My Class Inventory as an instrument in evaluating school types, found greater student satisfaction and less friction existed in single-sex schools. The study sample was 211 Barbadian students.

In a study of 1,353 British single-sex and 942 co-ed students examining student self-esteem Cairns (1990) found that, of the school types compared, single-sex students had a higher level of self-esteem (a finding suggested by Foon, 1988). No differences were found between boys' and girls' schools.

2.4 Summary of Coeducation/Single-Sex Research

Those in favour of coeducation see it as a more gregarious, friendly and enjoyable venue in which there is a greater tolerance to the development of self-confidence (concept) and self respect. They cite, among other reasons, boys improved academic progress, greater emphasis on student affiliation, social interest, competition and a more positive attitude to the opposite sex. The end product is a better well rounded individual (academically and socially).

Those who speak out against coeducation cite greater subject polarization, sex-stereotyping, gender role modelling and a situation in which girls avoid success. They even postulate that the "rating and dating" that goes on in a co-ed school is one of the primary reasons for its popularity.

Those in favour of single-sex education advocate a system with more discipline and control. Single-sex education is seen as offering stronger academic programmes and providing more positive school effects with greater female educational success. Single-sex schooling places less emphasis on traditional gender specific subjects and provides an environment free from sex-stereotyping.
2.5 Differences in Classroom Environments

In the early 1980's Trickett et al. (1982) assessed the environments of 78 classrooms in 15 representative single-sex and coeducational schools across the United States.

They based their research on the recently developed Classroom Environment Scale (CES) (Trickett & Moos, 1973). This scale identified nine dimensions which fall into three domains. Student affiliation, student involvement and teacher support assess the Relationship domain. Task orientation and competition are part of the Goal Orientation domain related to the learning goals of the classroom. The final set of dimensions, order and organization, teacher control, rule clarity and innovation form the System Maintenance/Change domain. In addition to comparing classrooms the study also compared the broader school type environments as experienced by female students.

Significant differences in favour of single-sex classrooms were found in involvement, affiliation, task orientation, competition, order and organization, teacher control and rule clarity.

Differences between single-sex/co-ed classroom environments were greatest in the authority structure in the classroom and the qualitative aspects of student relations. Single-sex classrooms appeared in general to be better organized and structured.

In the second part of the study single-sex school students reported less free time, less time spent on extracurricular activities and more time doing homework.

The results of both study objectives suggest that single-sex and co-ed schools form distinct classroom environments where different approaches to socialisation occur.
2.6 Senior College Effects

The creation of two senior colleges from the phasing out of two high schools in Perth Australia provided an interesting comparative study (Lake & Fraser, 1988).

The ethos in the development of the senior colleges was to provide second chance education through alternatives to traditional education after compulsory schooling. The evaluation of the success of the scheme included separate surveys and interviews of staff and 536 students. The instrument used to assess classroom environments was the College and University Classroom Environment Inventory (Fraser, Tregust & Norman, 1986). This survey set out to measure classroom Personalisation, Involvement, Innovation, Individualisation and Task Orientation. As well, student Cohesiveness and Satisfaction dimensions were analysed.

Significant positive differences in favour of senior colleges over high schools without adults were found in classroom Involvement, Innovation and Individualisation and in student Satisfaction dimensions. Only in student Cohesiveness did traditional high schools score higher than senior colleges. The most striking feature of this study was the success of senior colleges' in creating a distinctly positive environment as an alternative to traditional institutions. Students commented that one of the most rewarding aspects of the senior college was improved student self-esteem.

Would the ethos of a new Senior College and facility at St Andrew's create a similar positive attitude outcome as has been found in Senior Colleges in Western Australia?


In 1991 a new survey instrument was developed as a research topic for Education 654, Tests and Measurements. This survey attempted to delineate student
perceptions of their classroom and school environments at St Andrew's College (Appendix A). The aim of this study was to;

1. develop an appropriate classroom and school environment survey,

2. report senior student perceptions of their classroom and school environment before the transition to co-education.

3. identify statistically significant differences in perceptions of classroom and school environments between form levels.

A 36 item survey form was created and given to 100 fifth, 81 sixth and 40 seventh form students in the winter of 1991. The survey set out to measure four classroom environment characteristics and three school environment characteristics set out below;

1. Classroom Interpersonal Relationships (IPR): examined student-student and student-teacher interactions. Items such as "In class, teachers treat senior students more as adults than they do junior students" or "There are groups of students who fight and niggle with each other in class" were asked as part of this characteristic.

2. Classroom Goal Orientation (GO): how on task students were in the classroom and the degree of academic competition generated assessed the classroom orientation. Items such as "All class time is spent on the lesson of the day" or "Students try very hard to get the best academic grade they can" were used to measure this characteristic.

3. Classroom System Maintenance (SM): the order and organisation of the classroom was scrutinised in this characteristic. Rule clarity, teacher control and teacher innovation were determined in items such as "Rules in class seem to change a lot from day to day" or "Teachers are always telling their class to settle
down, keep quiet and get on with their work" or "There isn't much variety in the homework for each subject".

4. Classroom Atmosphere (ATM): how happy, serious or fully involved students were in the classroom was evaluated in this characteristic. Items such as "Classes tend to have happy environments" or "All students get involved in class activities" typified this characteristic.

5. School Facilities (SF): whether facilities were adequate to student needs was examined using items such as "There is a real need for separate sixth and seventh form common rooms" and "There are a variety of surroundings around school that cater for many different student activities".

6. School Relationships (SR): examined student-student interactions outside the classroom. Items such as "Prefects tend to abuse their position by handing out unjust punishments" or "Small groups of students tend to bully others in the school grounds" were used.

7. School Emphasis (SEMP): the perceived emphasis the school (and hence the students) place on sport compared with cultural activities at school. "The music department and the drama department have no problem recruiting students for the school choir and the school production" and "There is a strong commitment to sport by staff and students" were examples of some of the items used in this characteristic.

The general ideas for the first three classroom characteristics came from the work of Trickett and Moos (1973) in their Classroom Environment Scale. However it was felt that a happiness measure should be part of this particular study bearing in mind that research had indicated a happier environment in a coeducational situation. After some deliberation the three school characteristics were thought to be appropriate for the situation at St Andrew's College.
3.1 Scoring and Validating the Classroom and School Environment Survey

Students were asked to select their feelings as one of 'strongly agree', 'agree', 'uncertain', 'disagree' or 'strongly disagree' for each of the 36 items in the survey. An equal number of positive and negative statements, which were mixed randomly in the survey, made up a classroom or school characteristic. (In Appendix A all items are assigned to their characteristic).

The survey was scored positively. This meant that if a response to a positive statement was 'strongly agree' it scored 5, 'agree' scored 4, 'uncertain' scored 3, 'disagree' scored 2 and 'strongly disagree' scored 1. With negative statements scores were reversed. A 'strongly agree' response to a negative statement scored 1; a 'strongly disagree' response scored 5.

In the 1991 study the characteristic means (the average of all item scores in the characteristic) were used to compare form levels and determine statistically significant differences, however for this study all characteristic means were changed to T-scores. T-scores, standardised scores, were seen as more appropriate quantities than raw scores to present for comparison.

T-scores were first calculated as the difference in characteristic score mean and the sum of an average (or uncertain) score of 3 for each item that made up the characteristic as a fraction of the standard deviation. Multiplying this fraction by 10 and adding to 50 gave its T-score. As an example, 8 statements made up the characteristic Interpersonal Relationships. The actual mean score for Interpersonal Relationships for all year groups was 23.86 with a standard deviation of 4.06. The average response for this characteristic was a score of 24 (8 items x an average response of 3). The T-score for IPR was calculated as follows:
\[
\frac{23.86 - 24}{4.06} \times 10 + 50 = 49.7
\]

Reliability, determined for this present study, was done by survey split-half score correlation (half of each of the items per characteristic were summed and correlated to the other half). A split-half correlation of 0.644 was obtained indicating reasonable reliability for the survey. Low characteristics correlations provided evidence that characteristics were reasonably independent of one another. The correlations varied from a low of -0.014 for SF and GO to a high of 0.497 for IPR and ATM (all characteristic correlations are presented in Appendix B).

The validity of individual items for each characteristic was determined for this current study by calculating correlation coefficients for items with their respective characteristic. High correlations indicated a close positive correlation between item and characteristic. Correlation coefficients ranged from a high of 0.852 for item 36 to School Facilities to a low of 0.195 for item 4 to System Maintenance. The average correlation was 0.515 for all 36 items to their individual characteristic. Item 24 appeared to be the odd item out in that it did not correlate with its subscale \((7.41 \times 10^{-3})\). This aberrant item escaped detection until item validity was ascertained as part of this study. (A complete table of item to characteristic correlations can be found in Appendix C).

3.2 Survey Results (1991)

Table 1 presents the \(t\)-scores for all nine classroom and school characteristics measured.
TABLE 1: T-Scores for Actual 1991 (A) Classroom and School Characteristics

<table>
<thead>
<tr>
<th></th>
<th>TA</th>
<th>7A</th>
<th>6A</th>
<th>5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPR</td>
<td>49.7</td>
<td>47.6</td>
<td>47.9</td>
<td>51.6</td>
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<tr>
<td>GO</td>
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<td>SM</td>
<td>51.9</td>
<td>50.6</td>
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<td>ATM</td>
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<td>44.5</td>
<td>44.1</td>
<td>43.8</td>
<td>45.2</td>
</tr>
<tr>
<td>SENV</td>
<td>45.5</td>
<td>52.4</td>
<td>43.8</td>
<td>43.8</td>
</tr>
<tr>
<td>TSCO</td>
<td>50.3</td>
<td>51.5</td>
<td>47.9</td>
<td>50.5</td>
</tr>
</tbody>
</table>

7A, 6A, 5A: Form Levels  TA: all form T-scores combined

Abbreviations:

IPR: Interpersonal Relationships
GO: Goal Orientation
SM: System Maintenance
ATM: Atmosphere
CENV: Classroom Environment
SF: School Facilities
SR: School Relationships
SEMP: School Emphasis
SENV: School Environment
TSCO: Total Score

T-scores above 50 represent a positive attitude to a particular characteristic. Scores for IPR, GO, SM and ATM were combined to give an overall Classroom Environment characteristic (CENV). Scores for SF, SR and SEMP were combined to give an overall School Environment characteristic (SENV). Both CENV and SENV were combined to give an overall global environment Total Survey Score characteristic (TSCO).

Total A (combined form level scores) results indicated a positive student attitude to Goal Orientation, System Maintenance, Classroom Atmosphere and the total Classroom Environment. Slightly negative responses were obtained for Interpersonal Relationships, School Facilities, School Relationships and School Environment while a more negative score was obtained for School Emphasis. A neutral response was obtained for the Total Survey Score.
Examination of individual item mean scores for the Classroom and School Survey (Appendix) showed that students felt relatively positive about:

1. being treated as adults by teachers.
2. the variety of surroundings available at school.
3. rule consistency in the classroom.
4. planning of class activities.
5. happy classroom environments.
6. firm control by teachers over bad behaviour.
7. efforts at achievement.
8. teacher support.
9. affiliation between students in class.
10. innovation of activities in class.

On the other hand students tended to agree with some of the negative statements on such issues as:

1. student relations outside of class (including the way prefects handled their position).
2. groups of students who niggle and name call one another in class.
3. the emphasis on involvement in sport and culture.
4. the lack of separate common rooms for the 5th and 6th form students.
5. the way in which teachers settle their class.

As part of this research study analysis statistically significant differences were determined between year groups. These differences were calculated using analysis of variance about characteristic means (Fisher PLSD test at 95% confidence that differences were not due to chance). Table 2 presents these differences.
Table 2: Significant Differences between Form Levels for Actual (A) 1991 Classroom and School Environments

<table>
<thead>
<tr>
<th></th>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
<th>SR</th>
<th>SEMP</th>
<th>SENV</th>
<th>TSCO</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<td>7A*</td>
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<td></td>
<td>7A*</td>
<td></td>
<td>7A*</td>
<td>7A*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5A, 6A, 7A-form levels * Indicates the statistically more positive group

As can be seen, F7 were much more positive than other form levels on a number of characteristics. These differences were most likely due to the advantages given to F7 students in 1991. A separate common room, prefect status, perceived status in their position at the top of the student hierarchy and a sense of comraderie in a smaller group most likely accounted for their more positive attitude.

4. Expectation of Classroom and School Environments for 1992

Shortly after the administration of the Classroom and School Environment survey a similar survey (with the same 36 items) was given to 65 fifth and 39 sixth form students to fill out. This survey form differed in that it asked students to consider what their classroom and school climates would be like with the presence of female students in the following year. Form 7 students were specifically left out since they would not be returning in 1992. This expectation form, although administered in 1991, was scored and analysed as part of this current study.

The aims of this of this expectation form were:

1. to report student expectations of their classroom and school environments in 1992 with the presence of females at school.
2. to determine statistically significant differences between form levels.


Furthermore, the results of this survey would be used to see whether actual environments in 1992 were in any way related to the expectations of 1991.

4.1 Expected Classroom and School Environment Survey Results

Table 3 presents T-score results for the expectation survey.

| TABLE 3  T-Scores for Expected (B) Classroom and School Characteristics for 1992 |
|----------------|----------------|----------------|
|               | TB     | 6B     | 5B     |
| IPR            | 52.9   | 54.1   | 52.2   |
| GO             | 53.0   | 51.2   | 54.1   |
| SM             | 53.5   | 54.1   | 53.2   |
| ATM            | 59.4   | 58.8   | 59.6   |
| CENV           | 55.5   | 55.3   | 55.6   |
| SF             | 46.9*  | 49.6*  | 44.9*  |
| SR             | 51.2   | 53.4   | 49.8   |
| SEMP           | 46.9   | 45.1   | 47.8   |
| SENV           | 48.6   | 52.1   | 47.7   |
| TSCO           | 53.5   | 54.8   | 53.3   |

6B, 5B: form levels    TB- all form T-scores combined
* Students were not aware of the details of the proposed Senior College Complex
On almost all characteristics students expected improvement. Not being aware of the details of the proposed Senior College Complex to be built in 1992 had affected students' response to School Facilities.

Within the expectation survey the following significant differences between year levels were identified through analysis of variance about means and are presented in Table 4. This showed that there was almost no difference between form levels in perceptions of what classroom and school environments would be like with the presence of female students in the following year.

| Table 4: Significant Differences between Form Levels from Expectation Survey (B) |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| IPR GO SM ATM CENV SF SR SEMP SENV TSCO |
| 5B-6B 5B* |

* Indicates the significantly more positive group

A number of statistically significant differences were identified between actual 1991 and expected classroom and school environments. They are presented in Table 5.

| Table 5: Significant Differences between Actual 1991 (A) and Expected (B) Classroom and School Environments for 1992 for Form Levels |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| IPR GO SM ATM CENV SF SR SEMP SENV TSCO |
| 5A-5B 5B* 5A* 5B* |
| 6A-6B 6B* 6B* 6B* 6B* 6B* |
| TA-TB TB* TB* TB* TB* TB* |

TA, TB-form level T-scores combined

*Indicates the statistically more positive group
With the exception of one difference, all others favoured an expected improvement in 1992. Interestingly, all form levels expect significant improvements in classroom atmosphere and school relationships and F6 expect things to be better in 1992 on almost all counts. Neither F5 or F6 expect much difference in classroom Goal Orientation, System Maintenance or School Emphasis in 1992.

5. Classroom and School Environments in 1992

In the winter term of 1992 classroom and school environments were appraised using the Classroom and School Environment survey. This survey was completed by 127 sixth and 99 seventh form male and female students. Of the total sample population of 226 students there were 21 F6 and 19 F7 females. Like its predecessor in 1991 the survey aimed to:

1. report attitudes on actual classroom and school environments.

2. determine statistically significant differences between form levels.

The analysis of actual 1992 was complicated by the need to differentiate between males and females. Year level male and female scores (6M and 7M- males, 6F and 7F- females) are presented along side total F6, F7 year level total scores (T6, T7) and total survey score (TC) score.

5.1 Survey Results (1992)

Table 6 presents T-scores for each classroom and school characteristic.
<table>
<thead>
<tr>
<th></th>
<th>TC</th>
<th>6M</th>
<th>7M</th>
<th>6F</th>
<th>7F</th>
<th>T6</th>
<th>T7</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPR</td>
<td>51.8</td>
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<td>50.4</td>
<td>54.4</td>
<td>51.7</td>
<td>51.7</td>
</tr>
<tr>
<td>GO</td>
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<td>54.4*47.9</td>
<td>51.8</td>
<td>51.3</td>
<td>54.0*48.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM</td>
<td>49.2</td>
<td>49.3</td>
<td>48.3</td>
<td>51.2</td>
<td>50.4</td>
<td>49.6</td>
<td>48.9</td>
</tr>
<tr>
<td>ATM</td>
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<td>58.1</td>
<td>63.9</td>
<td>55.3</td>
<td>57.1</td>
</tr>
<tr>
<td>CENV</td>
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<td>53.5</td>
<td>50.3</td>
<td>52.9</td>
<td>55.2</td>
<td>53.2</td>
<td>51.5</td>
</tr>
<tr>
<td>SF</td>
<td>57.4</td>
<td>61.2*51.9</td>
<td>75.0*58.2</td>
<td>62.2*53.2</td>
<td></td>
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<tr>
<td>SR</td>
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<td>SENV</td>
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<td></td>
</tr>
<tr>
<td>TSCO</td>
<td>53.4</td>
<td>55.0*50.3</td>
<td>55.1</td>
<td>57.1</td>
<td>55.0</td>
<td>51.9</td>
<td></td>
</tr>
</tbody>
</table>

* identifies the statistically more positive group of the two

T6, T7: total male and female T-scores for year level

TC: combined T-scores for all year groups

Statistically significant differences between F6 and F7 males, F6 and F7 females and T6 and T7 were identified in Table 6 with an asterisk. The asterisk identifies the more positive group. Form 6 (males, females and year total) were significantly more positive about the School Facilities than the F7. Form 6 females were extremely positive about the new Senior College facilities (2.5 standard deviations above an 'Uncertain' response). Form 6 males were significantly more positive than
F7 males with their classroom Goal Orientation, School Facilities and overall School Environment and Global Total Score.

Positive T-scores were obtained on almost all characteristics. Only classroom System Maintenance and School Emphasis for form levels and total combined T-scores were below a T-score of 50.

Additional statistically significant differences for Survey C were identified as follows:

(a) within year levels (males versus females) (Table 7).

<table>
<thead>
<tr>
<th></th>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
<th>SR</th>
<th>SEMP</th>
<th>SENV</th>
<th>TSCO</th>
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<tbody>
<tr>
<td>6M-6F</td>
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<td>7M-7F</td>
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<td></td>
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<td>*</td>
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</tr>
</tbody>
</table>

* Indicates the more statistically more positive group

(b) between year levels (males versus females) (Table 8).

<table>
<thead>
<tr>
<th></th>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
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<th>SEMP</th>
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<td>*</td>
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</tbody>
</table>

* Indicates the statistically more positive group
In both Table 7 and 8 females were significantly more positive about a number of classroom and school characteristics than their male counterparts.


Identification of the positive changes in attitude to classroom and school characteristics as St Andrew's College underwent the transition to coeducation would serve as the main aim of this study. Statistically significant differences were determined between actual 1991 and 1992 attitudes as well as between expected 1991 and actual 1992 attitudes.

6.1 Actual 1991 and 1992 Attitudes

There were two methods of comparison between actual 1991 and 1992 attitudes. One obvious way was to compare F6 (1991) with F6 (1992) and similarity with F7. Table 9 presents this comparison. In the table the actual 1991 form level is identified as A (6A, 7A) and the actual 1992 form level is identified as C (6CM-males, 6CF-females, 7CM-males, 7CF-females). It should be noted that in this comparison the F6 in 1991 became the F7 in 1992 therefore the comparison at a form level is between several different groups of students.

The attitudes students had of their Classroom Atmosphere, School Facilities and School Relationships all showed a significant positive swing in 1992 for F6 males and F6 females. There were no statistical differences between F7 males and F7 females and only the F7 females felt more positive than the F7 males (1991) on Classroom Atmosphere and School Emphasis characteristics. On seven of the 10 characteristics there were 7 significantly positive swings in attitude for 1992 on the total combined scores (1992-TC). It was interesting to note that on the System Maintenance characteristic the 1991 combined score was more positive (TA).
Table 9: Significant Differences Between Actual 1991 (A) and 1992 (B) Environments (males and females)

<table>
<thead>
<tr>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
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<td>6A-6CT</td>
<td>6CT*</td>
<td>6CT*</td>
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<td>7A-7CM</td>
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<td>TA-TC</td>
<td>TC*</td>
<td>TA*</td>
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<td>TC*</td>
<td>TC*</td>
<td>TC*</td>
<td>TC*</td>
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<td></td>
</tr>
</tbody>
</table>

* Indicates the statistically more positive group
TA, TC: combined responses for all year levels

Another way of establishing differences in attitudes to classroom and school characteristics was to follow one year form level in 1991 into 1992. This is presented in Table 10. Strictly speaking this should only apply to male students as they were the only gender present at the school in 1991 however 1992 females were included as well.

Table 10: Significant Differences Between Actual 1991 (A) and 1992 (C) Attitudes for Following Form Levels

<table>
<thead>
<tr>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
<th>SR</th>
<th>SEMP</th>
<th>SENV</th>
<th>TSCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>5A-6C</td>
<td>6C*</td>
<td></td>
<td>6C*</td>
<td>6C*</td>
<td>6C*</td>
<td>6C*</td>
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<tr>
<td>6A-7C</td>
<td>7C*</td>
<td>6A*</td>
<td>7C*</td>
<td>7C*</td>
<td>7C*</td>
<td>7C*</td>
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</tr>
</tbody>
</table>

* indicates the more positive group

In this situation only one group of students was involved in each comparison. In almost every difference there has been a positive swing in attitude in 1992
compared with 1991. This was seen clearly with School Facilities, School Relationships, School Environment and Total Survey Score. Only on classroom Goal Orientation and System Maintenance were the 1991 groups more positive. There were no significant differences identified at any form level for Classroom Environment.

6.2 Expected 1991 and Actual 1992 Attitude Comparisons

As with the comparisons of actual 1991 and 1992 attitudes the same may be determined for expected 1991 and actual 1992 attitudes. Table 11 presents F6 comparisons (note that F7 did not complete the expectation survey and so is not presented as information in the Table).

<table>
<thead>
<tr>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
<th>SR</th>
<th>SEMP</th>
<th>SENV</th>
<th>TSCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>6B-6CM</td>
<td>6B*</td>
<td></td>
<td></td>
<td>6CM*</td>
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<td>6B-6CF</td>
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<td>6B-6CT</td>
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<tr>
<td>6B-TC</td>
<td>6B*</td>
<td>6B*</td>
<td>6B*</td>
<td>TC*</td>
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<td>TC*</td>
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</tbody>
</table>

Table 11: Significant Differences Between 1991 Expected (B) and 1992 Actual (C) T-scores for F6 (males and females)

* Indicates the statistically more positive group

Clearly the new Senior College with its facilities in 1992 exceeded the expectations students held in 1991. With the classroom System Maintenance characteristic the 1992 situation did not quite live up to the expectations students had in 1991. The remaining characteristics in 1992 all appear to live up to what students expected in 1991 (as identified by gaps under the characteristic).

Comparisons between form levels as they advance in level from 1991 to 1992 is
presented in Table 12. Only the male students are included in this Table as they were the ones to complete the expectation survey in 1991. Comparisons with the 1991 F7 level were not done because the F7 were not returning in 1992.

<table>
<thead>
<tr>
<th>IPR</th>
<th>GO</th>
<th>SM</th>
<th>ATM</th>
<th>CENV</th>
<th>SF</th>
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<tbody>
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<td>6B-7C</td>
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</table>

* Indicates the statistically more positive group

For many of the classroom and school characteristics the 1992 situation met or exceeded the expectations of 1991. This was especially so for the F6 of 1992 who were very positive about their school environment characteristics. Where there were gaps under characteristics meant that there was no discernible differences between what they expected and the actual 1992 situation. However, with classroom System Maintenance and Atmosphere the 1992 situation did not meet expectations and similarity with Interpersonal Relationships, Classroom Environment and Total Survey Score.

7. Discussion

7.1 Classroom and School Environment (1991)

In the 1991 a situation existed where F7 students were on top of the student hierarchical structure. They had their own separate common room and were accorded the status and place in the scheme of the structure of the school by both students and staff. Students of F7 were looked upon as mature and responsible and a group that set an appropriate example for others to follow.
Prefects were selected from the F7 group only. Most of the top sportsmen and leading actors in productions came from this group as did the head of the school council and other school committees. As a result the F7 group was a tightly knit and cohesive one with their own identity. The remainder of the students aspired to be members of the F7 group and obtain the rights and privileges they deserved.

The results of the 1991 survey clearly identified F7 as having a more positive attitude about classroom Atmosphere, School Facilities, School Relationships and School Environment (Table 2).

Generally, what went on in the classroom was viewed favourably by all forms (with the exception of the personal relationships). However the characteristics that made up the School Environment were less than positive for F5 and F6. The emphasis on sport rather than culture was seen in an even less favourable light by all year groups (Table 1).

Not surprisingly, the combined score of all form levels (TA) with all characteristics (Total Survey Score) was neutral. Form 6 definitely felt the least positive on the Total Survey Score and F7 the most positive.

7.2 Expected Classroom and School Environments (1992)

It would have been disappointing if students expected their classroom and school characteristics to deteriorate with the presence of females at school in 1992. Quite the contrary, students by and large, expected improvement on all characteristics (Table 3). The expectation about School Facilities decreased slightly for F5 (thus affecting TB). This may have been in part due to a lack of knowledge, on their behalf, of the details of the proposed Senior College complex.

Overall, F5 and F6 were equally positive in their expectations for the following year (Table 4).
Significant differences between the actual 1991 situation and the expected one for 1992 were identified in Table 8. All students in 1991 expected improvement in classroom atmosphere. Form 6 were expecting significant improvements on a number of characteristics (Classroom Atmosphere, Classroom Environment, School Relationships, School Environment and Total Survey Score).

7.3 Actual Classroom and School Environments (1992)

Five of the 7 classroom and school characteristics scored positively on TC (combined form level scores, Table 5) for the 1992 survey. Only System Maintenance and School Emphasis scored negatively (49.2 and 46.5 respectively).

Between F6 and F7 males there were some significantly different scores. Form 6 males were more positive about Goal Orientation, School Facilities and School Environment than F7 males.

Form 6 females were significantly more positive about School Facilities than F7 females.

The F6 group as a whole were more positive about Goal Orientation and School Facilities than the F7 group who perhaps would have been expecting improvements simply because of their F7 status.

Form 6 were obviously very pleased with improvements in their classroom and school environments and more so than F7 who may have been expecting improvement regardless of change.

Females in F6 and F7 were significantly more positive than males (Tables 6 and 7) about some of the measured characteristics (interestingly it was noted that on no characteristic was it the other way around). It would have been an interesting exercise in comparing the female students previous school's characteristics with
that of St Andrew's.

7.4 Survey Comparisons

A significant positive upward trend was found for the following characteristics when comparing the 1991 with the 1992 surveys (1992 being more positive, Table 9):

- Interpersonal Relationships
- Classroom Atmosphere
- School Relationships
- Total Survey Score
- School Facilities
- School Environment
- School Emphasis

This agrees with some previous research findings. According to those in favour of coeducation there should be a swing to a more positive environment (atmosphere), better teacher-student relationships (Dale, 1969, 1971, 1974), a happier environment (Feather, 1974, 1975; Schneider and Coutts, 1982) and a more positive attitude to school (Stables, 1990).

The positive significant swing on a number of characteristics was almost entirely confined to F6. When comparing the F7 of 1991 with that of 1992 there were only two significant differences (favouring F7 females). Bearing in mind the 1991 situation for F7, then it was not surprising to find a lack of significant differences between years.

There was no statistically significant positive swing noted between 1991 and 1992 for classroom Goal Orientation or Classroom Environment. On the other hand, there was a statistically significant drop in score for classroom System Maintenance. This implied support of the research of Trickett et al. (1982) where single-sex classrooms tended to place more emphasis on Goal Orientation and System Maintenance. It would appear that the transition to coeducation has had
only a mild effect on what goes on in the order, organisation and authority structure of the classroom.

Examination of the F5 of 1991 that became the F6 of 1992 along with the F6 of 1991 F7 of 1992 provided a very clear picture of the positive swing on certain characteristics (Table 10). In this case both the F6 and F7 of 1992 were more positive than they were as F5 and F6 in 1991 about School Facilities, School Relationships, School Environment and the Total Survey Score. Form 7 (1992) was more positive about classroom atmosphere than it was as F6 in 1991. Only on Goal Orientation and System Maintenance were the F6 and F5 of 1991 respectively less positive in 1992. Again these results tended to support the notion that co-ed classrooms and school environments placed less emphasis on classroom order and structure.

As perhaps was expected, some of the classroom characteristics (System Maintenance in particular) did not live up to student (1991) expectation (Table 11). Nevertheless, the creation of the Senior College complex and its facilities had a marked affect on student attitude beyond their 1991 expectations (affecting positively their attitude to the School Environment) and the lack of discernible differences on the remaining characteristics indicated that the 1992 situation was very much as expected.

7.5 Study Summary

Previous research into the emphasis of single-sex and coeducational schools tended to align single-sex schooling with order and discipline and coeducation with a happy and conducive environment for learning.

It would appear that the transition to coeducation at St Andrew's College has resulted in a statistically significant improvement in Classroom Interpersonal Relationships, Classroom Atmosphere, School Facilities, School Relationships,
School Emphasis and School Environment as indicated on the combined form level score in Table 9. This was also true for the Total Survey Score in 1992. There was no evidence gathered from the surveys that, for combined form level scores, Classroom Goal Orientation had declined. The only deterioration in score was for classroom System Maintenance had significantly declined for combined form levels in 1992.

These results support the general findings from a number of researchers who have examined the characteristics of single-sex schooling and coeducation and the transition from single-sex to coeducation.

7.6 Recommendations

The results of these series of surveys over two years clearly point to happier and more positive classroom and school environments in 1992. This must be most pleasing for St Andrew's College.

The school must now address the downturn on the classroom Goal Orientation characteristic in 1992 and the relative lack of improvement with the classroom System Maintenance compared with the other characteristics. Perhaps if the school placed more emphasis on teaching variety and style, the use of new and available resources and other avenues of classroom control the effect will be a more positive student attitude to the System Maintenance of the classroom. Continually finding ways of encouraging and achieving high academic standards and competition will also improve Goal Orientation in the classroom.

These will be the challenges for St Andrew's College in the future.
REFERENCES


Harvey, T.J. (1984) Gender Differences in Subject Preferences and Perceptions of Subject


42. Stanworth, M. Gender and Schooling: A Study of Sexual Divisions in the Classroom, (Hutchinson & Co. Publishers LTD.).


Appendix A: Survey Forms
# FORM A: SURVEY OF CLASSROOM AND SCHOOL ENVIRONMENT

**YEAR LEVEL _____**

The following are a number of statements about your classroom and school environment. Would you please indicate your attitude to each statement by circling one of the options corresponding to your feelings now. Your response is confidential.

You have a choice of the following feelings:

- **'SA'** strongly agree
- **'A'** agree
- **'U'** uncertain
- **'D'** disagree
- **'SD'** strongly disagree

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>In class, teachers treat senior students more like adults than they do junior students.</td>
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<tr>
<td>There are a variety of surroundings around school that cater for many different student activities.</td>
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<tr>
<td>Rules in class seem to change a lot from day to day.</td>
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<tr>
<td>Teachers are always telling their class to settle down, keep quiet and get on with their work.</td>
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<tr>
<td>Class activities are carefully planned and executed.</td>
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<tr>
<td>Prefects act in a mature and responsible manner in the school grounds.</td>
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<td>Classes tend to have happy environments.</td>
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<tr>
<td>Teachers always take time out from the lesson plan to talk about other things.</td>
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<tr>
<td>Teachers embarrass students for not knowing correct answers.</td>
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<tr>
<td>Teachers do not allow disruptive behaviour to occur in class.</td>
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<tr>
<td>11. The music department and the drama department have no problem recruiting students for the school choir and the school production.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>12. Students try very hard to get the best academic grade.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>13. Themes isn't much variety in the homework for each subject.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>14. Teachers do not move around the class helping individual students.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>15. All class time is spent on the lesson of the day.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>16. Teachers do not go out of their way to be friendly with students.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>17. There are groups of students who fight and niggle with each other in class.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>18. On the whole students get along well with each other in the school grounds.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>19. Teachers explain what will happen when a student breaks a classroom rule.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>20. Most students are not worried about academic achievement and so don't try very hard.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>21. On the whole students, within class, get along with each other reasonably well.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>22. Teachers are often disorganized, rushing around during class gathering resources for the lesson.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>23. There is a strong commitment to sport by staff and students.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
<td>D</td>
<td>SD</td>
</tr>
</tbody>
</table>
24. If a student's friends are academically motivated then that student will do well at school.  
25. Many students do not participate in class activities.  
26. A lot of name calling between students occurs in class.  
27. Few students participate in school cultural activities.  
28. Teachers go out of their way to provide individual academic help.  
29. Teachers praise students for working out correct answers.  
30. Students usually pass even if there isn't much academic competition in class.  
31. Activities that students do in a class vary from day to day.  
32. Prefects tend to abuse their position by handing out unjust punishments.  
33. Being a member of the school production has a lower status than being a member of the first fifteen.  
34. Small groups of students tend to bully others in the school grounds.  
35. All students get involved in class activities.  
36. There is a real need for separate sixth and seventh form common rooms.  

Thank you for completing this form.
FORM B: SURVEY OF CLASSROOM AND SCHOOL ENVIRONMENT

YEAR LEVEL _____

With the introduction of girls next year there will be many changes occurring at school. Would you please indicate your attitudes towards each statement AS YOU WOULD IMAGINE YOUR CLASS AND SCHOOL ENVIRONMENTS TO BE WITH GIRLS PRESENT NEXT YEAR.

You have a choose of the following feelings: 'SA' strongly agree 'A' agree 'U' uncertain 'D' disagree 'SD' strongly disagree

1. In class, teachers treat senior students more like adults than they do junior students SA A U D SD

2. There are a variety of surroundings around school that cater for many different student activities. SA A U D SD

3. Rules in class seem to change a lot from day to day. SA A U D SD

4. Teachers are always telling their class to settle down, keep quiet and get on with their work. SA A U D SD

5. Class activities are carefully planned and executed. SA A U D SD

6. Prefects act in a mature and responsible manner in the school grounds. SA A U D SD

7. Classes tend to have happy environments. SA A U D SD

8. Teachers always take time out from the lesson plan to talk about other things. SA A U D SD

9. Teachers embarrass students for not knowing correct answers. SA A U D SD

10. Teachers do not allow disruptive behaviour to occur in class. SA A U D SD
11. The music department and the drama department have no problem recruiting students for the school choir and the school production.

12. Students try very hard to get the best academic grade.

13. Themes isn't much variety in the homework for each subject.

14. Teachers do not move around the class helping individual students.

15. All class time is spent on the lesson of the day.

16. Teachers do not go out of their way to be friendly with students.

17. There are groups of students who fight and niggle with each other in class.

18. On the whole students get along well with each other in the school grounds.

19. Teachers explain what will happen when a student breaks a classroom rule.

20. Most students are not worried about academic achievement and so don't try very hard.

21. On the whole students, within class, get along with each other reasonably well.

22. Teachers are often disorganized, rushing around during class gathering resources for the lesson.

23. There is a strong commitment to sport by staff and students.
24. If a student's friends are academically motivated then that student will do well at school.

SA  A  U  D  SD

25. Many students do not participate in class activities.

SA  A  U  D  SD

26. A lot of name calling between students occurs in class.

SA  A  U  D  SD

27. Few students participate in school cultural activities.

SA  A  U  D  SD

28. Teachers go out of their way to provide individual academic help.

SA  A  U  D  SD

29. Teachers praise students for working out correct answers.

SA  A  U  D  SD

30. Students usually pass even if there isn't much academic competition in class.

SA  A  U  D  SD

31. Activities that students do in a class vary from day to day.

SA  A  U  D  SD

32. Prefects tend to abuse their position by handing out unjust punishments.

SA  A  U  D  SD

33. Being a member of the school production has a lower status than being a member of the first fifteen.

SA  A  U  D  SD

34. Small groups of students tend to bully others in the school grounds.

SA  A  U  D  SD

35. All students get involved in class activities.

SA  A  U  D  SD

36. There is a real need for separate sixth and seventh form common rooms.

SA  A  U  D  SD

Thankyou for completing this form.
FORM C: SURVEY OF CLASSROOM AND SCHOOL ENVIRONMENT

YEAR LEVEL _____ FEMALE/MALE _____ YEARS AT THIS SCHOOL _____

This survey form is part of a multiyear study of the changes taking place in classroom and school environments. The following are a number of statements about your classroom and school environment. Would you please indicate your attitude to each statement by circling one of the options corresponding to your feelings now. Your response is confidential.

You have a choose of the following feelings:

'SA' strongly agree  'A' agree  'U' uncertain

'D' disagree  'SD' strongly disagree

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
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<th>D</th>
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<tbody>
<tr>
<td>In class, teachers treat senior students more like adults than they do junior students</td>
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</table>
11. The music department and the drama department have no problem recruiting students for the school choir and the school production.

12. Students try very hard to get the best academic grade.

13. Themes isn't much variety in the homework for each subject.

14. Teachers do not move around the class helping individual students.

15. All class time is spent on the lesson of the day.

16. Teachers do not go out of their way to be friendly with students.

17. There are groups of students who fight and niggle with each other in class.

18. On the whole students get along well with each other in the school grounds.

19. Teachers explain what will happen when a student breaks a classroom rule.

20. Most students are not worried about academic achievement and so don't try very hard.

21. On the whole students, within class, get along with each other reasonably well.

22. Teachers are often disorganized, rushing around during class gathering resources for the lesson.

23. There is a strong commitment to sport by staff and students.
24. If a student’s friends are academically motivated then that student will do well at school.  
SA A U D SD

25. Many students do not participate in class activities.  
SA A U D SD

26. A lot of name calling between students occurs in class.  
SA A U D SD

27. Few students participate in school cultural activities.  
SA A U D SD

28. Teachers go out of their way to provide individual academic help.  
SA A U D SD

29. Teachers praise students for working out correct answers.  
SA A U D SD

30. Students usually pass even if there isn't much academic competition in class.  
SA A U D SD

31. Activities that students do in a class vary from day to day.  
SA A U D SD

32. Prefects tend to abuse their position by handing out unjust punishments.  
SA A U D SD

33. Being a member of the school production has a lower status than being a member of the first fifteen.  
SA A U D SD

34. Small groups of students tend to bully others in the school grounds.  
SA A U D SD

35. All students get involved in class activities.  
SA A U D SD

36. There is a real need for separate sixth and seventh form common rooms.  
SA A U D SD

Thank you for completing this form.
Appendix B: Characteristic Correlations (from 1991 survey completed for this study.

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Appendix C: Correlation of Items to Characteristic from 1991 survey completed for this study

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