An analysis of teacher-student interaction in the area of gender equity within primary school physical education

Brian D. Owen

Edith Cowan University

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AN ANALYSIS OF TEACHER-STUDENT INTERACTION IN THE AREA
OF GENDER EQUITY WITHIN PRIMARY SCHOOL PHYSICAL EDUCATION

A THESIS SUBMITTED TO
THE SCHOOL OF EDUCATION
IN CANDIDACY FOR THE DEGREE OF
BACHELOR OF EDUCATION WITH HONOURS

DEPARTMENT OF EDUCATION

BY

BRIAN D. OWEN

PERTH, WESTERN AUSTRALIA
DECEMBER 1989
DECLARATION

I CERTIFY THAT THIS THESIS DOES NOT INCORPORATE, WITHOUT ACKNOWLEDGMENT, ANY MATERIAL PREVIOUSLY SUBMITTED FOR A DEGREE OR DIPLOMA IN ANY INSTITUTION OF HIGHER EDUCATION AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF IT DOES NOT CONTAIN ANY MATERIAL PREVIOUSLY PUBLISHED OR WRITTEN BY ANOTHER PERSON EXCEPT WHERE DUE REFERENCE IS MADE IN THE TEXT.

BRIAN OWEN
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It is appropriate that the subject of the research was in the area of gender equity, as all the people who influenced me and helped me in the honours programme were women. I want to thank them for encouraging me - a "mere male".

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ABSTRACT

AN ANALYSIS OF TEACHER-STUDENT INTERACTION IN THE AREA OF GENDER EQUITY WITHIN PRIMARY SCHOOL PHYSICAL EDUCATION

The major purpose of this study is to examine sex role dependent and sex role independent teacher behaviour in sex integrated primary school physical education lessons, utilising a systematic behaviour observation instrument. Sex role dependent behaviour accepts or expects sex role stereotypic behaviour in males and females or discourages male and female behaviour that is non-stereotypic. Sex role independent behaviour encourages, accepts or expects female and male behaviour that is independent of sex role stereotypes. The study will allow the analysis of sex role stereotypic patterns of teacher behaviour to determine the extent to which equality of participation and interaction in those classes observed is being achieved. The expectations of teachers of physical education may favour and reinforce the participation and achievement of boys over girls, if sex stereotypic patterns of behaviour are present.

Additionally the study will evaluate the modifications to the Sex Role Dependent/Independent Teacher Behavior Observation Instrument (Griffin, 1980), as recommended by Griffin (1980) and Rate (1987) in order to determine if the modified instrument provides an effective means of obtaining descriptive information about teacher behaviour related to sex role
dependence or independence. These modifications require a reduction in the number of categories, and the combination of these categories into more simplified categories in order to generate greater recorded frequencies in the specified categories, thus improving the observation instrument as a measure of sex role dependent/independent behaviour.

The final outcome of the study may be to provide an improved descriptive observation instrument which will provide information for teachers about sex equity in their lessons. The modifications to the instrument may provide teacher educators with an observational instrument which could be utilised by pre-service and in-service teachers, assisting them to become more aware of sex equity issues.

The research employed a cross-sectional design, examining normal co-educational physical education lessons in a primary school. Students from years four to seven were observed. Four male and four female classroom teachers were observed teaching physical education to their own class of students. Data were collected about the nature of class organisation, teacher-student interaction and teacher language using the interval recording technique. Each lesson was recorded on videotape in order to assist data analysis. The videotaped lessons were coded and analysed at a later time, using the observation instrument.

The observed teacher behaviour data reported in this study
indicated the existence of differential teacher-student interaction, language and class organisation patterns. Additionally the instrument identified interaction and participation patterns related to sex role dependent and independent behaviour. The general pattern was that the participation patterns of boys and girls were similar, but boys interacted with the teachers more than was expected. In contrast, interaction with girls by teachers was considerably lower than expected in most categories of the observation instrument. These results demonstrate that teacher or student sex stereotypic behaviour does not necessarily change as a consequence of integrating boys and girls in physical education classes.

A solution to this problem would be the grouping of students in sex integrated classes on the basis of ability. Thus boys and girls would be grouped on the basis of equal ability, allowing a more equitable share of teacher interaction. Another possible solution is the sex segregation of boys and girls in physical education classes, allowing for a more equitable distribution of teacher interaction. Girls should, however, continue to have unrestricted choice as to the range of activities they wish to engage in.

The modifications to the instrument resulted in no data loss. The category frequency was increased and the total number of categories was decreased, simplifying the researcher's task in coding observed interactions and enhancing coder
reliability. The utilisation of the modified observation instrument in pre-service and in-service training courses and peer evaluation would enable teachers to heighten their consciousness of their own interaction patterns. This would allow them to identify sex role dependent and independent behaviour patterns.
CHAPTER 1

INTRODUCTION

Statement of the problem

The purpose of this study is to examine sex equity in relation to teacher-student interaction and in terms of sex role dependent and sex role independent teacher behaviour in sex-integrated primary school physical education lessons. Sex role dependent behaviour expects, reinforces or accepts traditional sex role stereotypic behaviour in males and females. In addition, it discourages male and female behaviour that is inconsistent with traditional sex role stereotypes. Sex role independent behaviour encourages, expects or reinforces female and male behaviour that is independent of traditional sex role stereotypes.

The dependence or independence of sex role behaviour of teachers can affect the equity of classroom life, therefore differential perceptions and treatment of male and female students need to be addressed. The different performances attributed to boys and girls cannot be explained away entirely on the basis of innate biological and physiological differences. In physical education and school in general, most achievement differences are a reflection of society's expectations; they are learned differences not necessarily inherent biological
differences. On the basis of gender, students are frequently treated differently by teachers and society alike. (Boutilier and San Giovanni, 1983; King, 1988)

Sex role stereotyping and sex bias has received increasing attention over the last decade from educators within the school environment. The research has shown that in almost all areas of programming within schools that have been investigated, a consistent pattern of sex bias and sex role stereotyping has occurred. These areas include curriculum content, instructional materials, programming for boys and girls, educators' attitudes, staffing patterns and vocational and personal counselling. (Hargreaves, 1985; Riordan, 1985; Hoferek, 1982) In addition, several studies have also made a critical analysis of sport in our society and found that equal opportunity for all participants is lacking. (Boutilier and San Giovanni, 1983; Duquin, 1981; Theberge, 1985) The downgrading of women's skill levels and the perpetuation of the myth that women are inferior has been shown in these studies as contributing to the dominance of males in sport, and the claim that despite increased participation levels and equal opportunity for women in sport, it cannot be assumed that equal participation will mean future equality of status for females in sport.

Theberge (1985; 194) discusses gender differences in rates of participation and claims that:

A full analysis of the forms and implications of sport as a male preserve must show the
connection between these differences and patterns of power and domination ... These differences indicate women's relative exclusion from activity that is culturally valued and to a considerable extent publicly supported. Public support of sport takes place in a variety of ways including the location of programmes in educational institutions, direct government support of sport organizations, and indirect support through tax-incentives for corporate donations and sponsorship of events and programmes. Thus, women's underrepresentation in sport is an instance of their unequal access to the valued goods and resources of our society.

She continues (p. 197), "Sport as a male preserve, then, is an important cultural practice that contributes to the definition and recreation of gender inequity".

This descriptive analytic study addresses the issue of teacher-student interactions with regard to sex equity in primary school physical education. Specifically, the study answers the questions: Do teachers exhibit sex role dependent and sex role independent behaviours in sex integrated physical education classes? Does the modified Sex Role Dependent/Independent Teacher Behavior Observation Instrument (Griffin 1980) provide an effective means of obtaining descriptive information about teacher behaviour related to sex role dependence or independence?

**Approach taken by this study**

The study uses the Sex Role Dependent/Independent Teacher Behavior Observation System (Griffin, 1980) to identify sex role dependent and sex role independent behaviour. The study
was undertaken to see if sex-role stereotypic interaction patterns occur between teachers and students in sex-integrated physical education classes in Western Australian primary schools. The study also evaluates the success of the modification of the Griffin instrument and if it effectively identified sex role dependent and sex role independent behaviour of teachers.

Sex role stereotyping amongst teachers has been studied in the last decade but its main focus has been on teacher attitudes rather than identifying teacher behaviour in the classroom. (Alpers, 1977; Macaulay, 1979) These studies assumed that the teacher's attitude towards sex role stereotyping was related to how a teacher behaved toward male and female students. However, in Good, Sikes and Brophy (1973) it was shown that differential treatment of male and female students was due to the teacher's reactions to the student's behaviour rather than the sex of the student. Good (1983) reported that the research findings in classroom interactions are not always transferable to the particular characteristics of individual classrooms, therefore teachers find them difficult to implement. Teachers' self-reports and observations of classroom behaviour are often different to that of the researchers' findings. This could be attributed to the heavy demands of teaching which do not allow much time for self-evaluation and analysis.
Monitoring sex role dependent behaviour and attitudes is difficult for teachers especially with the use of self-reports. They may be useful as initial consciousness-raising instruments but their accuracy is highly questionable. The use of a systematic behaviour observation instrument is a far more accurate measure of recording teacher-student behaviours. The interactions are recorded by an observer who enters the natural environment of the school in order to identify specific behaviours between the teacher and students. The goal of systematic teacher behaviour observations is to provide an accurate record of those teacher behaviours specified for observation.

The direct observation of sex role dependent or sex role independent teacher behaviour places the focus on the critical point of communication of teacher expectations to students; this provides an accurate assessment of what actually happens in the class environment. (Rate, 1987) This is in contrast to a teacher's self-report of behaviour or attitudes, which provides only a profile of what the teacher thinks happened in the classroom. Griffin's (1980) instrument was designed specifically to identify sex role dependent and sex role independent behaviour of physical education teachers, therefore it was most effective as a systematic observation instrument in this study. The three sections developed by Griffin are: class organisation, interaction and language. The data collected
showed that although the teachers did not make many sex role dependent or sex role independent comments, discriminatory patterns of teacher-student interactions did occur. In general, boys participated and interacted more with teachers and girls participated and interacted less, despite a lower ratio of boys to girls within the classes. In this study Griffin's instrument was simplified in the interaction and language sections, however no significant data was lost because categories identifying sex role dependent and independent behaviours were still maintained. The use of Griffin's instrument enabled findings in this study in the primary school environment to be compared and contrasted with results obtained by Griffin in junior high school and Rate in secondary schools.

**Significance of the study**

Primary school physical education classes have been sex integrated for some years, but this does not necessarily ensure sex equity. This area of research has not been fully investigated. The expectations of teachers of physical education for boys and girls in sex integrated classes may favour and reinforce the participation and achievement of boys over that of girls. In Western Australia, one study has been conducted in co-educational physical education classes in secondary schools (Rate, 1987), but no such research has been undertaken in primary
school co-education physical education classes. By carrying out this research, this study will provide information about the levels of sex role dependent and sex role independent behaviour within physical education classes related to the sample selected. These data will allow the analysis of sex role stereotypic patterns of teacher behaviour to determine the extent to which equality of participation and interaction in those classes is being achieved. The results are significant because sex fair programmes in physical education will only be achieved when teachers are made aware of inequitable classroom patterns and make a commitment to change.

A second outcome of the study will be the evaluation of the modifications to the Sex Role Dependent/Independent Teacher Behavior Observation System designed by Griffin (1980). As has been suggested by Griffin (1980) and Rate (1987) the categories in the instrument could be reduced due to infrequent use, and the lack of informative data provided in some instances. The refinements in reducing the number of categories should result in a greater frequency of recorded observations in the specified categories thus providing data which is of more relevance to teachers.

The final outcome of this study will be to provide descriptive information to teachers about sex equity in their classes. Information about the present research findings and the modification of Griffin's instrument will be provided for pre-service and
in-service teacher educators to enable teachers to become more aware of sex equity issues in primary school physical education. Teachers will also receive assistance in planning and evaluating personal behaviours to change sex role dependent behaviour in their teaching. The availability of a simplified observation instrument for use by teachers will encourage collaborative research.

Overview

The purpose of this study is to examine sex equity in terms of sex role dependent and sex role independent teacher behaviour in primary school co-educational physical education classes. In the second chapter, a review of the literature relevant to the observation of teacher sex role stereotyping behaviour in classrooms is presented. Chapter 3 describes the methodology of the study and includes details of the systematic teacher behaviour instrument used in the analysis. Data analysis and results comprise Chapter 4. The final chapter includes a summary of the problem and the results, evaluation of the refinements to the instrument and a discussion of the implications of the study.
CHAPTER 2

REVIEW OF RELATED LITERATURE

Women's participation levels and interest in sport has received increasing attention in the literature in recent years. There have been many comparisons made as to the participation and interest levels between males and females in sport, both in the school system and society in general. This has led to a push by women sports educators for increased attention by both society and the education system to encourage the participation of girls in sport. (O'Brien, 1987; Marburger, 1987; Hall, 1984)

Sex role stereotyping is an issue which has received attention as a possible cause for the negative attitude and lack of participation of girls in physical education. This issue has been of greater interest since the inception of co-educational classes in secondary school physical education. There has been limited research in the area of teacher behaviour in this connection in secondary schools, and even less in primary schools, however, there is considerable evidence to suggest that sex role stereotyping does exist.

As there has been a very limited amount of research on sex role stereotyping undertaken in primary school physical education lessons, the majority of literature is focussed on secondary school physical education. This literature review
examines the research on teaching styles and attitudes which encourage or discourage sex stereotyping, describes attempts to address sex role stereotyping among teachers, and discusses systematic student-teacher behaviour observation and teacher behaviour changes.

Teaching styles and attitudes which encourage or discourage sex stereotyping

The studies of teacher attitudes toward sex role stereotyping are relevant to this study because it is evident from available research that sex role stereotyping and sex bias exists in schools in general, and in physical education in particular. (Bain, 1985; Soutar, 1979; Duquin, 1981)

Pewtress (1987) suggests that girls are not encouraged to be involved in sport because it is seen as primarily a male activity. Therefore they stop playing sport because they do not see sport as an appropriate activity for themselves. Sex role stereotyping is seen as having negative effects on students and teachers and is seen as an underlying cause for their lack of interest and participation in physical education. There are studies which investigate the effect of sex role stereotyping and support this assumption. Hoferek (1978) found that teachers have sex stereotypical attitudes towards activities they favour in co-educational classes. In a later article, Hoferek (1982)
examined the attitude of teachers toward the place of women in society and how it related to their attitude toward the participation of girls and boys in co-educational classes. If they were more liberal minded regarding the role of women in society, they had a more favourable attitude towards the participation of students of both sexes in co-educational classes. Another study by Vertinsky (1984) found that teachers first need to become more aware of how their stereotypical assumptions influence their selection of teaching strategies. The findings of the study suggested that male physical educators focused on discipline and well-specified goals, while female teachers avoided the use of forceful discipline and endorsed broader, more diffused goals. Vertinsky opines (p. 429) "These differences in strategic preferences are hardly conducive to bridging the gender performance gap in physical education". The study showed that girls may face teachers who are more inclined to address the social-fun aspects of sport rather than competitive performance issues, whereas boys were encouraged to pursue higher levels of performance in sports and were oriented towards being more competitive and forceful. Vertinsky concluded that matching teachers and students on the basis of gender may not be in the best interests of either boys or girls and suggested that mixed classes should be persevered with as a remedy for the gender gap.

Traditionally, sport and physical education is associated with the male sex role stereotype. As a result sex role bias
in sport and physical education is perhaps more blatant and resistant to change than in other school programmes. Jobling and Macdonald (1987) support this idea by saying that being good at sports seems to be an attribute ranked highly for males by both males and females, but it is ranked very low for females by both males and females. As a result women and girls lack confidence in physical activity and often attribute their success to luck rather than their own ability. This assumption is supported by Dyer (1982) in his research that showed a positive relationship between feelings of physical competency or well-being and psychological well-being in the sports woman.

It has only been in the last few years that physical education classes have changed from sex segregated to sex integrated classes in secondary schools. In primary school, physical education mixed gender groups have always existed but Ignico (1989, p.23) noted that "numerous studies and reports have consistently demonstrated that teachers have gender-differentiated behaviour patterns, that is, they teach boys and girls differently or have varied expectations for them." As a result the literature has shown the desirability of sex integrated physical education, but has identified many of the problems associated with its implementation. In 1972 legislation was introduced in the United States requiring all classes to be sex integrated by means of Title IX of the Education Amendments Act. In Western Australia, the Sex
Discrimination Act, 1984, was instituted by the Government making it unlawful for an educational authority to discriminate against a student on the ground of the student's sex. This has meant that physical education teachers in Western Australia have now started to develop sex integrated physical education programmes. The legislation is such that it has not enforced this change, but there is a general awareness of the need for equal opportunity in all areas of education. Therefore physical education teachers have been encouraged to offer similar curricula to girls' and boys' classes, and have increasingly scheduled co-educational classes. The rationale behind this change to sex integrated classes is that it will assist the elimination of sex bias in physical education.

There has been considerable debate as to the interpretation and intent of this legislation in physical education in Australia, leading to a number of articles being published. Browne (1986) first alerted teachers to the legislation and discussed its implications. Again, Browne (1988) discussed the issue with regard to equality in assessment in sex integrated classes leading to replies from Paddick (1988), Burden (1988), Macdonald (1989), Dyer (1988), and Evans (1989). The issue showed that sex-integrated physical education is of grave concern to physical educators and is of concern within the classroom and to society in general. In addition, investigations of the skill acquisition and attitudes of males and females in sex integrated and sex segregated physical
education classes reported insignificant or conflicting results. (Iso-Ahola, 1979; Lopez, 1987)

A study by Lopez (1987) also raised questions about the accuracy of the assumption that mixed gender physical education classes eliminate sex bias. She observed mixed gender physical education classes in junior high school. These children were first year pupils in their first term. She found in activities such as swimming, the pupils mixed well as they were used to engaging in mixed swimming in their leisure time. It was a neutral activity, which was not considered either masculine or feminine. However, in activities such as hockey or gymnastics the abilities of the children were quite pronounced. Boys with greater skill levels did not want girls in their team because they were not sufficiently skilled. On the other hand, if the girls did not fit the feminine stereotype and were better than the boys, such as in gymnastics, the boys became self-conscious and would not try a new skill.

In another study conducted by Solomons (1977), with primary school children in their fifth year, it was found that gender is a salient factor of differentiation among students in physical education classes. She found the girls were left out of game interactions by the boys. This occurred even when the girls displayed greater skill levels than the boys. In fact, both girls and boys regarded boys as more highly skilled even when girls were identified as more skilled in objective
tests. Even when girls were included in skilled game play, they tended to give scoring opportunities away to the boys. Another important observation noted by Solomons was that teachers of physical education had different expectations for boys and girls. Boys were praised for their performance, where girls were praised for their effort.

Solomons' findings and those of many other researchers discussed, support many assertions about sex integrated classes. They have found that teacher behaviour that reinforces differentiated expectations of boys and girls in physical education is a factor which exists. Also, these observed differences are consistent with traditional views of male and female stereotypes in society. Merely integrating children into mixed gender physical education classes is not enough to eliminate sex bias. Finally teacher behaviour may be the crucial element in either perpetuating or eliminating sex role stereotyping and bias in physical education. The development of teacher strategies to address these problems of sex bias in sex integrated classes is recommended.

**Attempts to address sex role stereotyping among teachers**

There has been a proliferation of programmes and materials designed to address sex role stereotyping among teachers in the United States of America since 1972. This has come about because
of the implementation of Title IX of the Education Amendments Act.

The problem with these programmes is that they do not include ways to access changes in teacher-student behaviour interactions in the classroom through systematic observation. These materials and programmes focus on requirements specific to physical education in Title IX; analysis of the teaching environment; suggestions for planning sex integrated programmes; information about sex role stereotyping and its effects; methods of eliminating sex role stereotyping in classes and schools; and curriculum development materials for teacher and student awareness of sex role stereotyping.

The Women's Educational Equity Act Program (WEEAP) has developed a planning manual for administrators and physical educators to help them design physical education programmes which assure equal opportunity for females in physical education. The Equity in Physical Education Planning Manual (1980) was developed to help physical educators interpret Title IX guidelines and implement these into their physical education programmes. Other manuals were also developed by The American Alliance of Health, Physical Education, Recreation and Dance, to help administrators, teachers and coaches in physical education and athletics. Manuals entitled Complying with Title IX of the Education Amendments Act of 1972 in Physical Education and High School Sports Programs (1976), Title IX and Physical Education: A Compliance Overview (1976) and Implementing Title IX in Physical Education and Athletics:
Application Booklet for Physical Activity Specialists (1978) were designed to interpret Title IX guidelines. All these manuals were developed to help educators evaluate whether or not their school physical education programme is in agreement with Title IX. They outline the contents of Title IX, provide checklists for evaluating all aspects of programming and staffing and specific teacher behaviour to avoid what might reinforce sex role stereotyping in physical education.

Bunker (1987) wrote a chapter in the Handbook for Youth Sports Coaches describing many strategies that coaches can use to encourage girls and boys to participate in sports together. She offered suggestions on how sports teachers can provide quality co-educational experiences and adjust activities to allow for a wide range of skill and motivational levels in sex integrated classes. However, the handbook does not specifically address sex role stereotyping among physical education teachers.

In addition to the planning manual that WEEAP has produced, there has also been a teacher handbook and seven modules developed which helps teachers address sex discrimination in physical education. Introduction to Stereotyping and Discrimination (1981), Sex Role Stereotyping and its Effects (1981), Biological Sex Differences (1981), Introduction to Title IX (1981), Curriculum Development (1981), Teacher Behaviour (1981), and Student Performance Evaluation.
(1981), are examples of these projects. All focus on one or more of the following areas: increasing teacher understanding and awareness of sex role stereotyping and its effects; defining sex role stereotyping in society; providing teachers with an understanding of the biological myths relating to sex bias; identifying curriculum materials designed for student use; procedures and attitudes which perpetuate sex role stereotyping; and eliminating teacher behaviour which promotes sex role stereotyping. The modules have been used successfully by physical educators in the United States to increase their awareness of sex role stereotyping in an effort to change attitudes towards sex roles. However, no actual teacher behaviour observation techniques were used to evaluate teacher behaviour change in the classroom. Project Missi... Link was another WEEAP development and Arrighi, Chr... and Acknight (1981) were extensively involved in field testing these materials. The field testing phase involved 172 preservice education teachers. The instructional materials focused primarily on the application of teaching approaches and behaviour that are sex fair as well as educationally sound. To enable teachers to respond to the problems that limit sex equity, three components were built into each instructional unit: knowledge of sex bias behaviour; awareness of sex stereotypic behaviour in the classroom; and application of the appropriate actions to promote sex fair behaviour. As a consequence of this project, instructional materials were
re-evaluated to include more emphasis on instructional approaches and teaching behaviours and less attention given to background information on equity issues. It was recommended that the content of the instructional material needed to assimilate new knowledge about sex equitable teaching practices in order to better prepare future physical education teachers. The link between knowledge, attitudes and the actual implementation process in school physical education classes is a topic that warrants further investigation.

The teacher education programmes and materials that have been examined here are representative of attempts made by educators interested in sex role stereotyping and bias to address the problem. The programmes and materials rely heavily on self-evaluation and reports of teachers, attitude inventories, or checklists to describe teacher behaviour and attitudes towards sex role stereotyping and sex bias. The accuracy of such reports is questionable. They depend to a large extent on self-appraisal and evaluation in an area that requires a change in behaviours and attitudes to comply with the current sex discrimination laws.
Numerous studies have been carried out which identify the differences between male and female teachers, and male and female students, using systematic teacher behaviour observation systems. (Good, Sikes, and Brophy, 1973) These studies identify the frequency patterns and type of teacher interactions with female and male students. Differentiated teacher interaction with female and male students was identified as an important part of describing teacher sex role stereotypical behaviour. The patterns revealed in these studies showed consistent differential teacher interaction between boys and girls. Good, Sikes and Brophy demonstrated in their research that boys received more attention in lessons than girls. The observations revealed that teacher disapproval occurs more often with boys than girls. The boys were much more active and aggressive and therefore received more frequent teacher interactions. The girls however, were more passive than the boys, (behaviour that was encouraged by the teacher), thereby receiving less frequent attention.

Studies in secondary physical education classes have been conducted by Bain in Chicago (Bain, 1975; 1976) and Houston (Bain, 1978) using systematic observation to describe regularities of teacher behaviour and class organization which communicate values and norms to students. In The Hidden Curriculum Re-examined (1985) Bain asserts that research on
teacher expectations in physical education indicated that the teacher's perceptions of students are influenced by gender, appearance and perceived effort and that these expectations influence the interactions between teacher and student in a way that is consistent with the teacher's expectations. The research indicated that there are patterns of behaviour which emerge in physical education lessons which can be interpreted as emphasising achievement, autonomy, privacy, orderliness, universalism and specificity. Differences were also shown to exist in the experiences of male and female students, suburban and urban students, athletes and physical education students.

In South Australia, research was carried out with primary school children and reported on in Teacher-Student Interaction. (n.d.) A systematic observation instrument was developed in order to help teachers of physical education become more aware of whether preferential treatment existed in their classes. The research found that boys consistently received preferential treatment, with few exceptions, especially during the warm-up phase of the lesson when motivation for what is to come is a key factor. This altered the teacher's perceptions of their effectiveness to a point where they were conscious of giving more quality attention to the girls, eliminating sex bias in their teaching.

In order to identify teacher behaviour more effectively in physical education lessons, an instrument was developed by
Griffin (1980) specifically for this purpose. This systematic observation instrument provides a more complete and accurate picture of teacher sex role related behaviour than is presented by either the studies of differential teacher interactions with females and males or teacher self examinations. These types of instruments have been demonstrated to be most effective in facilitating change in teacher behaviour and providing accurate descriptions of classroom events.

The use of systematic teacher behaviour observation instruments can provide physical education teachers and teacher educators with increased awareness of teacher behaviour that is related to sex equity in physical education classes. Strategies which identify and change teacher behaviour towards sex equitable and non-sex stereotyped physical education programmes, and identify and reinforce teacher behaviour that encourages non-sex stereotyped and sex equitable student participation, need to be implemented. (Griffin, 1981)

A further study in primary schools was conducted by Griffin (1983) with sixth and seventh grade gymnastics classes and she found that students' behaviour revealed patterns of differentiation based on sex. Serious participation in specific gymnastic events was governed by perceived sex appropriateness of the event. Generally, boys only interacted with girls to "hassle" them. Girls generally only interacted with boys when responding to being hassled. Among boys, interactions tended to be physical, combative, public, clown-like,
and hassling girls. In contrast to those of the boys, the girls' interactions were verbal, co-operative, private, serious, and in response to the harassment of the boys. This affected the participation levels in the lesson; boys' participation in "girl-appropriate" events was either frivolous or reluctant; girls participation in "boy-appropriate" events was either exploratory or reluctant. Students segregated themselves according to sex which helped to reinforce sex differentiation participation and interactions.

Griffin (1984) used the Sex Role Dependent/Independent Teacher Behavior Observation Instrument she developed in 1980 along with formal interviews and informal discussions with physical education teachers to conduct a study which identified girls' participation patterns in a middle school team sport unit. Sex-integrated classes were observed resulting in six styles of participation levels being identified including "athlete", "Junior Varsity player", "cheerleader", "femme fatale", "lost soul", and "system beater". Observations revealed that the majority of the girls were classified in varying degrees as "Junior Varsity players", "cheerleaders" and "lost souls". As these categories were classified as non-assertive behaviours, it is accurate to say that non-assertive sport behaviour was typical for most girls in the team sport activities observed. Teachers who were made aware of these participation patterns in their female students could help them to become more assertive, thereby increasing their
confidence levels in order to increase their enjoyment of physical education.

Rate (1987) used the Sex Role Dependent/Independent Teacher Behavior Observation Instrument developed by Griffin in 1980 to observe physical education lessons in secondary schools in Western Australia. She found that teachers do exhibit sex role dependent and sex role independent behaviours in sex integrated physical education classes, a finding consistent with that of Griffin. Boys participated more than was expected and teachers interacted with them more often. Also boys were favoured on the variables of "control" and "participation", while teachers more frequently interacted with girls on the variable "encourages unsuccessful performance". This evidenced that offering encouragement to girls more than boys for unsuccessful performance is likely to reinforce lower levels of skill performance and perpetuate sex role stereotyping of girls in physical education lessons.

In any teacher education programme which is related to the issue of sex equity, the assumption is that teachers believe in fairness and want to be as fair and effective as possible in the classroom. Therefore physical educators need to be informed of whether there are sex stereotypic patterns in their classes, thereby affording them the opportunity to be personally committed to changing these patterns if they exist. Also specific suggestions on how to change these patterns need to be provided. At both the pre-service, and
in-service levels, teacher behaviour can be observed with
the systematic observation instrument and teachers can be
guided in their attempts to address the problem of sex equity.
The identification of sex role related behaviour of teachers
of physical education within co-education classes in this
study is a starting point for those who must contend with the
problems of equity in physical education.
CHAPTER 3

METHODODOLOGY

This chapter is divided into six sections. The first section describes the subjects and settings. The second section describes the observation instrument used in the study. Section three describes the modifications to the observation instrument. The fourth section is concerned with the ethical issues and considerations. The fifth section describes the data collection methods including the use of the video camera, field and anecdotal notes, and instrument reliability and validity. The sixth and final section is concerned with problems encountered during recording and coding of observations.

Subjects and settings

One primary school in the Perth metropolitan area has been selected as representative of Perth metropolitan schools utilising a comprehensive and effective school based physical education programme. The school is known to have co-educational physical education and to conduct two half hour physical education lessons, as well as one full hour lesson, each week. The school does not have a physical education specialist, instead, physical education is incorporated into the normal school programme of the classroom teachers. This
school was considered to be representative of schools without a physical education specialist but which still have a comprehensive programme of physical education each week. The school draws on students from all socio-economic backgrounds within its boundaries and thus has a diversified student population.

Initial contact was made by the researcher through the Principal. Subsequent official approval to conduct research in the school was requested through the Department of Physical and Health Education at the Western Australian College of Advanced Education, Mount Lawley Campus, and further permission was solicited from the Ministry of Education of Western Australia. Following official approval and the Principal's agreement to participate in the study, the teachers to be observed were contacted and their willingness to participate established. Class timetables, lesson types, class sizes, and teaching areas for physical education were ascertained. A total of eight teachers were contacted, four males and four females, and agreement obtained for their participation in the study. Each teacher was observed on two occasions with the same class engaged in the same type of activity in each lesson. This procedure was adopted to obtain observations which were representative of that class. Classes from years four to seven were included in the study, with a total of 425 students observed: 216 males and 209 females. Each teacher conducted his/her physical education lessons with the class to
which he or she is normally assigned. If any of the participating teachers fell ill on an assigned day, no recording took place; the recording of a relief teacher would not have been appropriate.

Classes were conducted in the typical school environment using the typical equipment used at the school. Observations were conducted on the school oval, basketball courts, netball courts, and in the covered assembly area. These areas were normally used for physical education lessons.

Observations were conducted during the third term of the school year from the fourth of August to the fifth of September, 1989. The teachers had well established programmes with set rules and routines for Physical Education lessons.

**Description of the observational instrument**

The Sex Role Dependent/Independent Teacher Behavior Observation System designed by Griffin (1980) was used as the basis for this study. It is the only published instrument which allows the examination of sex equity in physical education. The instrument is divided into three main observation sections: class organisation; interaction; and language. Each section and the categories within were carefully operationalised by the author so that the observations were specific and mutually exclusive. The coding manual provides full details with examples and is included in Appendix 1.
The first section on class organisation provides a context for observing teacher sex role dependent-independent behaviours. The five successive categories within this section are student participation patterns, class groupings, class leaders, curriculum materials used, and rule changes. Each of these categories structures the data to provide information about class organisation by the teacher and the effects of this organisation on equitable male and female student participation in class.

The data collected in the class organisation are as follows:

1. The number of active participation units by males and females during each participation observational period;
2. the number and composition (by gender) of student participation groups within the class and whether these groups were structured by the teacher or by the students;
3. the number of females and males pictured or cited in curriculum materials used in the class;
4. the number of males and females identified as leaders in the class, and whether they were chosen by the teacher or the students; and
5. the number of rule changes in games initiated by the teacher to alter female and male participation patterns.

The interaction section provides information on the frequency and kind of teacher interaction with male and female students. Seven of the categories are inherently sex role
related, while nine of the interaction categories are sex role neutral. The number of teacher behaviours within each category directed to male and female students was recorded in this section. The specific categories are listed as follows: instructs; praises successful student; encourages unsuccessful student; criticises unsuccessful student; points out student model/demonstration; control/discipline interaction; physical contact with a student; informal interaction; management interaction; sex role dependent comment; discourages poaching; sex role independent comment; encourages poaching; discourages student sex role dependent behaviour; encourages student sex role dependent behaviour, discourages student sex role independent behaviour; and, encourages student sex role independent behaviour.

The language section is the final section of the observational instrument. It provides information on how a teacher uses language in a lesson that is either sex role dependent or sex role independent. The five categories in this section consist of: use of pronouns; use of activity terms; calls individual students; refers to males/females; and use of sex role dependent names. The number of times a teacher used this type of language was recorded within each category.
Modifications to the observational instrument

Within the instrument there are twenty two teacher sex role behaviour categories included in the language and interaction sections of the instrument. There were fifteen categories of teacher behaviour that were sex role neutral, and seven categories of teacher behaviour that were sex role related. Griffin (1980) found that these sex role related behaviours were very low frequency categories within her observations but as they were directly related to the purpose of the instrument, it was felt it was important that they be recorded. Rate (1987) found in her study using Griffin's instrument that these categories were also infrequently tabulated. She recognised their significance however, as they were related to sex role behaviour, and that without them potentially significant data could be overlooked. She therefore suggested that a combining of the sex role dependent categories would be an advantage and that there would be no subsequent loss of vital data whilst the instrument would be more manageable with the subsequent loss of categories. The combining of categories could also be incorporated within the sex role independent categories. Rate (1987) recommended that the following categories be omitted from the interaction category: encourages student sex role dependent behaviour; discourages student sex role independent behaviour. From the language category the
omissions were: uses sex role dependent name; and, uses sex role dependent activity terms. In place of these categories would be the one category within the interaction category: Sex role dependent comment. In addition, the omission of further categories within the interaction category would be: discourages student sex role dependent behaviour; and, encourages student sex role independent behaviour.

Furthermore within the language categories the omissions would be: uses sex role independent activity terms. These would be replaced with the one category in the interaction category: sex role independent comment.

For the purpose of this study it was suggested that a further two categories be discarded from the observational instrument without any significant loss of important data. These two categories are within the interaction category and consist of: encourages poaching; and, discourages poaching. The data which were collected in these categories were recorded in the categories: sex role dependent comment; and, sex role independent comment. It was observed in Rate's (1987) study that these categories were infrequently recorded and that their significance would be retained by their being recorded within the two previously mentioned categories.

These revisions of the Sex Role Dependent/Independent Teacher Behavioral Observation System designed by Griffin (1980) resulted in a reduction in the total number of categories. However, an increase in the frequency of
observations within these categories occurred without significant loss of data. These changes also simplified the researcher's task of locating categories, and allowed the coding sheet to be more easily discussed with the teacher observed.

**Ethical issues and considerations**

The Principal, school and teachers observed during this study are not identified by name within this study. Analysis of data does not compare or contrast individual teacher's attitudes towards sex role stereotyping and sex bias in their teaching methods. The differences between male and female teachers' sex stereotyping was examined as a group and on an individual basis whilst preserving anonymity. The content, skill level of teacher or students, teaching standards, or lesson preparation was not evaluated or reported on within this study. The teachers were not required to prepare special lessons with special equipment or teach in an area not normally used for typical school physical education lessons. The students were not required to wear special clothing or identification tags, except that clothing which is typically worn during physical education lessons. Special adjustments were not required to the classroom teacher's programme, or that of the school, thereby eliminating the necessity for special notes for parents or changes to the usual running of the class being observed. Any changes to the normal teaching
environment and practices would necessarily inhibit the effectiveness of this research study.

**Data collection**

The Sex Role Dependent/Independent Teacher Behaviour Observation System utilises the interval recording technique. This technique requires the researcher to record the frequency of occurrence of each behaviour being observed over a set period of time (interval). As suggested in the coding manual of the Griffin instrument, three minute intervals were used to record teacher-student interactions, teacher language and all categories in the class organisation section. In each interval, all behaviour occurrences were recorded. A thirty second period during which student participation was observed, alternated with the three minute intervals. This procedure was followed for the entire class observation.

All data were collected by the researcher and field assistant. Each lesson was recorded onto video tape using a VHS colour video camera, mounted on a tripod. The teacher's voice was recorded directly onto the videotape by means of a small cordless microphone. The microphone was attached to the teacher's shirt and the battery pack clipped to the teacher's belt or placed in the teacher's pocket. The researcher wore headphones to ensure that the sound equipment was functional and to assist in directing the video camera in the direction
of the teacher's attention. The field assistant used a
clipboard and notepad to record field observations, the
student numbers, class organisation, and the division between
boys and girls. Anecdotal records were also collected during
the lesson, which provided back-up data to supplement the
video and audio taping.

The researcher and his assistant arrived thirty minutes
before the commencement of each lesson to be observed in order
to set up the equipment and make last minute checks with the
teacher about the location of the teaching station. Prior to
the lesson, the teacher to be observed was given the small
cordless microphone and battery pack in order to attach these
to his/her clothing. The researcher and assistant were
positioned in such a way as to be able to observe the entire
teaching station, but so that they did not interfere with
student participation. The timing during the lesson is
crucial, with student participation observations being
conducted every three minutes, for a thirty second interval.
Both the researcher and the assistant utilised stop watches
in order to synchronise anecdotal records with videotaped
records. During a thirty second interval the group nearest
the camera was taped specifically, for student participation
levels. At the completion of each thirty second interval,
the camera was directed back to the teacher to continue
interaction and language observations.
Use of video camera

Griffin (1980) in her study used video taped lessons but felt their use was not as effective as live observations. The problems she encountered were of a technical nature: poor quality of vision due to inclement weather; limited experience of researcher using this type of equipment; and restrictions of field of view due to the nature of the equipment. These problems were not encountered by the researcher in this study as the weather in this location is not as extreme and the knowledge and use of video equipment by the researcher is extensive. Therefore, the quality and effectiveness of the video recording was at a level commensurate with live observational recording.

An additional reason for using video recording during lessons is to enhance validity and reliability of observations while using the instrument. Each lesson was watched as many times as necessary in order to code all sections of the instrument accurately. The numbering system incorporated into the video cassette recorder was extensively utilised, in unison with a stopwatch, in order to accurately code every interaction which occurred throughout each lesson. Extreme scrutiny and careful analysis of each lesson was possible by using the pause and rewind functions of the video cassette recorder. This substantially increased the reliability of the analysis of recordings.
Use of field and anecdotal records

Extensive field and anecdotal notes were recorded during each lesson by the research assistant in order to complement the quantitative data collected by the observational instrument. Rate (1987) acknowledged that field and anecdotal notes recorded during observations should be incorporated in further studies using this observational instrument as a supplement to the data in order to provide a more complete picture of interaction patterns. Therefore, these notes were recorded providing additional information which the observational instrument or the video recording did not collect. These notes provided supplementary information to assist with identification of behaviours not easily categorised within the coding instrument.

The field assistant also carefully recorded the times in which each additional anecdotal interaction occurred. Overall impressions about the interactions and player patterns were observed and noted, providing a more complete picture of all aspects of each lesson. Additionally, relevant teacher comments were noted, including their reactions to the experience of being observed.
Instrument reliability and validity

Griffin (1980) chose content validity as the appropriate means of determining the validity of this instrument. A panel of three experts in the area of sex equity and physical education attested to the content validity of the instrument. Griffin calculated the reliability of the instrument using an inter-coder agreement formula:

\[
\frac{\text{Agreement}}{\text{Agreement} + \text{Disagreement}} \times 100
\]

Griffin (1980) initially trained three coders. Inter-coder agreement between each coder trainee and the expert coder was obtained for the total instrument, each section, and each category within each section of the instrument. Inter-coder agreement was above the 90% criterion for the total instrument, class organisation section and interaction section, but not for the language section. Inter-coder agreement for the individual categories of the instrument were variable. The class organisation and interaction sections generally had a 90% agreement rate for each of their categories. The categories within the language section were less acceptable because of the lack of consistency in achieving 90% agreement. Most of these categories are included
in this study and evaluation as to their effectiveness will be determined after data collection. In order to establish coder reliability in each category of the instrument in this study, two lessons were randomly selected and recoded. A 90% coder agreement rate was established in most categories, which Griffin indicates is necessary for coder reliability. Those categories which had a lower agreement rate were very low frequency categories. Therefore, the analysis of the categories was not significantly affected overall.

Problems encountered during recording and coding observations

Some problems were encountered by the researcher during observations. These problems relate to the context, recording of observations, equipment and observer effects. Similar problems were experienced by Rate (1987).

Some problems in coding were inherent in the context of the natural setting. The fast pace and complexity of interactions in a physical education class affected data collection even though all lessons were recorded onto video tape. On some occasions the teacher positioned the class or a group in an activity too close to the camera. This made it difficult for the researcher to frame the whole class within the field of view of the camera, making coding difficult for those interactions which could not be recorded by the video camera. This situation happened once or twice over the entire recording period. The problem was overcome to a great extent by recording
more extensive anecdotal notes. Sometimes teachers had several brief but separate interactions with many students in a variety of categories within a time span of twenty to thirty seconds. If the camera was not directed toward the teacher and the students concerned, coding became difficult. Though each teacher had his/her individual style, the pattern of teacher interaction with individual students was generally a matter of a series of brief comments. In a few seconds the teacher may have quickly praised one student, instructed another, joked with a third and disciplined yet another. This style provided ongoing challenges to the researcher in terms of continually rewinding the tape, stopping the timing, recording the position at which coding stopped by number, and then commencing timing and coding again at the correct point in order to record all interactions accurately.

The coding process was further complicated by the physical movement of the teacher and the students in the class. In a physical education class everyone is moving, in contrast with most class settings where the teacher usually stands in the front of the class and students usually sit at desks. In addition, the size of the physical education classroom may be as much as a 100 m x 60 m oval or two basketball courts, rather than the contained and well-defined structured limits of an indoor classroom. This necessitated the continual panning of the camera toward the teacher and the students and the necessity to zoom the camera in or out, depending on the
distance of the subject from the camera. During the recording process a further problem was the temptation to record student play rather than teacher behaviour, especially with teachers who said very little or who acted primarily as referees in their classes.

Although the researcher had a complete schedule of activities and teachers for each day during the observation period, there were occasional schedule changes due to other classes waiting to use the same facilities, special events, weather or industrial action by the teachers. These changes of schedule created problems. Sometimes, teachers were not sure which teaching area they would be using until just before a class began. Consequently, setting up the equipment was delayed until immediately prior to the commencement of the lesson. As there was a considerable amount of organisation needed in setting up the equipment, malfunctions occasionally occurred. For example, if a lesson location was changed, a power point had to be found, equipment wiring disconnected and then reconnected and checked, and sound checks had to be made.

On other occasions, the equipment malfunctioned because the extension cord was disconnected, audio recording was interrupted through headphone malfunction or the teacher forgot to turn on the wireless microphone transmitter. These events caused considerable anguish to the researcher, until the problem was corrected. As a consequence, on the few occasions
on which these events happened, there was a brief time lapse when recording ceased until the fault was found and remedied. When this occurred, more detailed anecdotal notes were recorded, resulting in minimal loss of data.

The process of recording class events with the video camera entailed a measure of difficulty due to distractions which occurred during the course of a lesson. Some of these distractions included: the gardener deciding to fertilise the oval using a tractor, cutting down trees on the perimeter of the oval with a chainsaw; a group of RAAF planes flying overhead in formation; a dog deciding to join in on a lesson. These events distracted the students and the teachers for a period during lessons and made recording difficult, but were only occasional hazards.

Sometimes the researcher understood the content of the interaction, but could not determine to which student the comment was directed. Determining teacher-student eye contact and training the camera on those concerned became an important part of identifying teacher-student interactions. The field assistant proved invaluable on those occasions, recording the interactions in the anecdotal notes. Positioning of the researcher, camera and field assistant to provide an unobstructed view of the teaching area reduced the problem. If the researcher could not determine which student was being addressed by the teacher, the interaction was not coded. This procedure was followed on one or two occasions throughout the entire recording
sessions.

In spite of the thoroughness with which the categories were defined and differentiated so as to be mutually exclusive, there were several incidents where the researcher could not decide between two categories. The researcher on these occasions made decisions as consistently as possible with the category definitions outlined in the coding manual. For example, a teacher may place a hand on the shoulder of a student whilst simultaneously instructing him/her on how to execute a skill. In this instance, both behaviours would be coded.

Equipment used in recording observations was designed to facilitate the accuracy and objectivity of the data collection. Although the recording equipment was well maintained, there were occasions when some equipment was not sufficiently sensitive, while on others it was too sensitive. For example, when a lesson was conducted in the undercover area due to inclement weather, the light sensitivity of the camera was affected. Either there was not enough light in the middle of the undercover area or there was too much light at the perimeter. This required continual adjustments to the exposure settings on the video camera. This problem was alleviated by the compiling of comprehensive field notes and the shifting of the recording equipment to a more centralised location. Additionally, on one occasion, the video recording equipment was changed, requiring the researcher to make adjustments to
recording technique appropriate to the new equipment.

Sometimes teachers wanted to actively demonstrate a skill to the students. The microphone was a hindrance at such times, occasionally bouncing out of their pocket, which may have influenced their decision to avoid unnecessary movement. Also the teacher activity sometimes caused static in the microphone which further complicated the coding process.

In spite of the observer's attempts to be unobtrusive, the teacher and students were conscious of the presence of the observer and the video recording equipment in the class. Normal self-consciousness was evident in some teachers, one teacher expressing the feeling of being threatened, feeling uncomfortable about being watched and recorded onto video. Other teachers however, seemed unaffected, forgetting the microphone was attached to their clothing and walking away with it at the end of a lesson. The students were also affected in varying degrees, some waving to the camera or peering into the lens, whilst others approached the observer at the completion of the lesson asking if they had been recorded. In each case only male students reacted in this manner. The teachers and students became less self-conscious as observations progressed.

Students were curious about the microphone the teacher was wearing and the presence of the video equipment and observer. It was explained to the students that the observer was primarily interested in watching the teachers, not the
students. Although student curiosity decreased as observations progressed, the novelty of being recorded onto video by a stranger could not be completely eliminated.

In order to avoid teachers changing their normal teaching styles and types of verbal interactions with students, they were not briefed as to the major purpose of observing their lessons. They were told that the researcher was interested in observing all verbal interactions, no mention being made of gender equity, thereby reducing the possibility of lesson interaction being modified during observations. This caused some curiosity by teachers as to the purpose of the study, but this was dispelled at the conclusion of observations with a brief explanation.

During observations, as already mentioned, extensive written notes were made by a field assistant to supplement the video recording. These notes provided additional information when the video camera was not working efficiently or was incorrectly positioned. When salient examples of sex role dependent/independent behaviour occurred, these were highlighted, enhancing the accuracy of lesson recordings. Developing an instrument to describe not only the quantity but the quality of student participation in physical education classes would be an important addition to elucidate the subtle ways in which sex role stereotypes continue to influence male and female participation in physical activity.
This chapter describes the methodology used in this study. The first section describes the nature and location of the classes selected. The Observational Instrument selected for this study is the Sex Role Dependent/Independent Teacher Behavior Observation System designed by Griffin (1980). A description of the instrument is provided in the second section of the chapter. In the third section a description of the modifications to the instrument is given and the reasons why these were deemed necessary. Ethical issues and considerations are explained in the fourth section and in the fifth section the process of data collection is described with reference to the effective use of the video camera, the recording of field and anecdotal notes and the means by which reliability and validity were established for the instrument. The problems encountered by the researcher in recording and coding observations are described in the sixth and final section.
CHAPTER 4

DATA ANALYSIS AND RESULTS

Table 1 gives the total frequencies for boys and girls for each category within each section. This was obtained by collapsing the data over classes, providing an overall picture of the frequency of use of each category. In the class organisation section, the participation and leader categories were used with greatest frequency. Several patterns of class organisation were noted.

On some occasions, instructions for the activity were given in the classroom, and the activity groups selected, thus allowing the students to commence the activities immediately on reaching the outdoor area. This maximised the time allowed for activity. In other lessons, the teacher instructed the students outside the classroom, occasionally demonstrating what was required, but in most cases the children commenced the activities without prior demonstration. The typical sequence of events during a class period was that students listened as a whole class to the teacher giving instructions. Student practice of the skill in one or two drills or simulation games then followed, culminating in an activity or game. In most of the lessons the time taken for instructions accounted for a large percentage of the class time resulting in short activity
Table 1

Total Frequency of Category Usage for All Lesson Observations

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Total</td>
</tr>
<tr>
<td>Class Organisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>158</td>
<td>144</td>
<td>302</td>
</tr>
<tr>
<td>Leaders</td>
<td>34</td>
<td>26</td>
<td>60</td>
</tr>
<tr>
<td>Curriculum Materials</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Rule Changes</td>
<td>-</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td>275</td>
<td>209</td>
<td>484</td>
</tr>
<tr>
<td>Management</td>
<td>302</td>
<td>186</td>
<td>488</td>
</tr>
<tr>
<td>Control/Discipline</td>
<td>188</td>
<td>44</td>
<td>232</td>
</tr>
<tr>
<td>Praises Successful Student</td>
<td>135</td>
<td>134</td>
<td>269</td>
</tr>
<tr>
<td>Physical Contact</td>
<td>33</td>
<td>36</td>
<td>69</td>
</tr>
<tr>
<td>Encourages Unsuccessful Student</td>
<td>53</td>
<td>54</td>
<td>107</td>
</tr>
<tr>
<td>Informal Talk</td>
<td>31</td>
<td>41</td>
<td>72</td>
</tr>
<tr>
<td>Criticises Unsuccessful Student</td>
<td>100</td>
<td>30</td>
<td>130</td>
</tr>
<tr>
<td>Points Out Student Model</td>
<td>104</td>
<td>44</td>
<td>148</td>
</tr>
<tr>
<td>Sex Role Dependent Comment</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Sex Role Independent Comment</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Pronouns</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Student Names</td>
<td>521</td>
<td>220</td>
<td>741</td>
</tr>
<tr>
<td>Refers to Males/Females</td>
<td>51</td>
<td>16</td>
<td>67</td>
</tr>
</tbody>
</table>

Total Female Students Observed = 209
Total Male Student Observed = 216
Total Students Observed = 425
periods, frequently less than five minutes per activity.

Generally the skill practice was accomplished in small groups, these later being combined into larger groups for the activity or game. Teachers rarely emphasised skill acquisition during activities, and there was no attempt to redistribute student participation. In the majority of lessons the students participated in integrated groups of boys and girls with all students having the opportunity for equal participation rates. Students were grouped for the activities either by teacher or student choice, with very limited attempts made by teachers to objectively group students according to ability for the purposes of instruction or group selection. The only exception was that in some cases the teacher dictated that the groups had to consist of both boys and girls. Table 1 shows that the participation patterns for boys and girls were similar, with almost equal active participation rates by both boys and girls throughout the lesson.

Leaders were chosen on most occasions by the teacher. Of the sixty leaders chosen in eighteen lessons, thirty-four of them were boys, and twenty-six were girls, showing that boys accounted for a higher proportion of the total number.

The use of curriculum materials which were gender specific occurred only twice, by one teacher in a single lesson. The teacher instructed the children to think of themselves as
"Indian chiefs" while instructing them in the correct grip of a soccerrosse stick. Later in the lesson she also used the term "Indian princess", thus providing a female example for the class.

In order to encourage more equitable student participation in class games teachers occasionally modified the rules. Rule changes were used in a very limited manner during observation sessions. These changes were directed exclusively to the girls in order to accommodate those individuals with inferior skill levels. In one instance, in a goal shooting activity in basketball, the teacher modified the rules to allow two girls to just hit the ring for a point instead of throwing the ball through the hoop, in order to allow their group to finish.

In the section of interaction, teachers interacted with highest frequency in the categories of instruction, management, control/discipline, and praises successful student. Criticises unsuccessful student and points out student model also exhibited high frequency levels but to a lesser extent. In each of these categories, Table 1 reveals that teachers interacted more frequently with boys than with girls. Boys received four times more interactions in the control/discipline category than girls, but in the praises successful student category the difference was negligible. When teachers selected skill demonstrators or pointed out student performance models to the class, the boys were selected more than twice as often as the girls. Criticism of student behaviour occurred regularly
throughout classes, with three times as many interactions being directed towards the boys. In contrast, physical contact, informal talk and encourages unsuccessful student were used with low frequency and with similar patterns of interaction toward both boys and girls.

The sex role dependent and sex role independent categories registered low frequencies of interaction. Occasional sex stereotypic comments occurred. Teachers made comments such as "It didn't make any difference to your group winning" (that is, the teacher placing girls in the group had not affected its success rate), or "Just as well we have some athletic girls" (in a gymnastics class). Similarly, teachers made a few comments that were intentionally non-sex stereotypic, such as "Perhaps girls should play more football" (when the girls' group beat the boys' group), or to an all-girl group, "See if your group can still win with a boy in it", or "You beat all those girls, did you? They were really good, too!" It was important to record this data as these types of comments have a major effect on student perception of the teacher's attitude to gender equity.

In the language section, markedly different frequency patterns were noted. Students were referred to by teachers in various ways and these were recorded in three categories. These were the use of the student's name, the use of a pronoun (he/she, him/her), or by referring to males/females (ladies/gentlemen). Most frequently, teachers addressed the
students by their names, however, boys were addressed in this fashion twice as many times as girls were. Boys were frequently addressed by their surnames as discipline or to encourage them to greater enthusiasm in activities. Teachers referred to students in group inclusive terms such as ladies/gentlemen, girls/boys, or fellows. When referring to the class as a whole, teachers used inclusive language such as "people", "kids", or "folks". The terms "darling" or "love" were used when teachers were addressing individuals of both sexes. Additionally the expression "mate" was used by one teacher to address boys when instructions were being given. These terms were accepted by students without adverse effects. The total number of language interactions with boys was more than twice that of girls. This could be explained by an examination of the high frequency of interactions for boys in the control/discipline and management categories of the interaction section.

Selection of activity groups

In Table 2 the group selection category of the class organisation section was separated from the other categories because it does not assume the two item pattern (boys and girls) of the other categories. Instead it contains the three items of boys' groups, girls' groups and integrated groups. It was necessary to provide this data as it demonstrates how groups are chosen, and by whom.
Table 2

Selection of Activity Groups

<table>
<thead>
<tr>
<th>Lesson Number</th>
<th>Student Initiated Groups</th>
<th>Integrated Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys only</td>
<td>Girls only</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>3</td>
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<tr>
<td>9</td>
<td>1</td>
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</tr>
<tr>
<td>10</td>
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<td>-</td>
</tr>
<tr>
<td>11</td>
<td>-</td>
<td>-</td>
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<tr>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
<td>3</td>
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<tr>
<td>14</td>
<td>1</td>
<td>1</td>
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<tr>
<td>15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>
The grouping patterns observed during activity sessions were separated into three categories. Groups were separated into either gender specific groups of boys and girls or integrated. The composition of the groups was determined on some occasions by the teachers, and on others by the students depending on the activity or the teacher’s discretion. If the students were asked to select their own group they were invariably gender specific, however, if the teacher chose the groups they were of mixed gender. The examples of mixed gender groups chosen by the children resulted from the choice allowed them being conditional. The leaders, once appointed, had to choose equal numbers of boys and girls for their groups. Without such conditions the children chose their friends of the same sex on every occasion.

In Table 2, each lesson observed is shown along with the number of activity groups, and who initiated those groups. There was almost an even number of sex segregated groups (fourteen boys and fifteen girls) throughout all lesson observations. All these single sex groups were structured by the students. The sex integrated groups were structured evenly by teachers (thirty-one) and students (thirty-one). All the integrated groups structured by the students were done so under the teacher's instructions. For example, the teacher chose the leaders, then instructed them to "pick a boy and a girl alternately" in order to ensure sex integrated groups.

Groups were not chosen according to ability. The major
emphasis was directed towards sex integrated groups. It was expressed that if this occurred the participation patterns would be evenly spread, with no group dominating another. This data supports this expression, with the observed participation interaction rates of boys and girls being similar with almost equal active participation of males and females throughout the lesson. The nature of the activities generally allowed for this type of grouping, as they were not highly competitive, encouraging participation and activity rather than competition.

The only lesson observed which incorporated groups that were structured by both the teacher and the students was Lesson twelve. However, the students were instructed by the teacher to structure their groups in this way, thus following the pattern observed in all other lessons where integrated groups were structured by the students. In lessons where many groups were organised the activities lent themselves to group sizes of three or four, thus allowing for maximum participation. Lessons which incorporated only two or three groups were team game activities which had large sex integrated groups. This resulted in less active participation by individuals.
Sex role dependent/independent behaviour

A comparison of the actual percentages of occurrences with the percentages expected on the basis of the proportion of boys and girls in all classes allowed the examination of patterns of sex role dependent and independent behaviour. The three sections of class organisation, interaction and language were analysed in each category. These were tabulated as follows:

In the class organisation section, the number of active participation units for males and females based on group activity sessions were totalled for each observation period. These, along with the total participation scores were converted to percentages for males and females. The numbers of male and female leaders were identified and the number of rule changes which occurred during observations were totalled and the data were converted to percentage scores.

In the interaction section, the total number of teacher interactions with male and female students were calculated and converted to percentage scores. Each individual category was similarly treated with their percentage scores being calculated.

In the language section, the total figures for each category of teacher language used with male and female students was determined and converted to percentage scores.
In Table 3, the observed and expected percentages of frequencies for boys and girls are compared in each category. The expected percentage simply reflects the proportion of boys and girls observed. In the class organisation section the categories involved are participation, leaders, curriculum materials and rule changes. In this section, the results show that girls and boys were observed participating at the expected levels. During the group activity sessions of the lessons, boys and girls were observed participating at only slightly different percentages than expected and participation rates were almost equal. In contrast, in the leaders category 57% of the leaders were boys and 43% were girls. These percentages varied 6% in favour of the boys from that expected, based on the total number of boys and girls in those classes. The category identifying the type of curriculum materials used by teachers during observations showed an equal number of examples being used for both boys and girls though there were few curriculum materials used during class observations. However, in the category of rule changes made by the teacher during observations, 100% of these were directed towards the girls.

In the interaction section, the categories involved are: instruction, management, control/discipline, praises successful student, physical contact, encourages unsuccessful student, informal talk, criticises unsuccessful student, points out student model, sex role dependent comment and sex role.
Table 3

Observed and Expected Percentages of Boys and Girls Participation and Teacher Interaction for Selected Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Observed Percentage</th>
<th>Expected Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td><strong>Class Organisation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Participation</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Group Activity Participation a</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Leaders</td>
<td>37</td>
<td>43</td>
</tr>
<tr>
<td>Curriculum Materials</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Rule Changes</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Interactions</td>
<td>61</td>
<td>39</td>
</tr>
<tr>
<td>Instruction</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>Management</td>
<td>62</td>
<td>38</td>
</tr>
<tr>
<td>Control/Discipline</td>
<td>81</td>
<td>19</td>
</tr>
<tr>
<td>Praises Successful Student</td>
<td>51</td>
<td>49</td>
</tr>
<tr>
<td>Physical Contact</td>
<td>48</td>
<td>52</td>
</tr>
<tr>
<td>Encourages Unsuccessful Student</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>Informal Talk</td>
<td>43</td>
<td>57</td>
</tr>
<tr>
<td>Criticises Unsuccessful Student</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Points Out Student Model</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>Sex Role Dependent Comment</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Sex Role Independent Comment</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Pronouns</td>
<td>73</td>
<td>27</td>
</tr>
<tr>
<td>Student Names</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>Refers to Males/Females</td>
<td>76</td>
<td>24</td>
</tr>
</tbody>
</table>

aCalculations based on group activity sessions only
independent comment. In the interaction section, total observed interaction percentages of teacher interactions with boys were 10% higher than expected percentages. Conversely, girls interactions were 10% lower than expected in the percentages for the total interactions. Boys received a higher percentage of interactions than the girls in the instruction and management categories, receiving respectively 6% and 11% higher interactions than was expected. The greatest discrepancies between the observed and expected frequencies occurred in the categories of control/discipline, criticises unsuccessful student and points out student model. In each of these categories boys had substantially more interactions with the teacher than expected. In the category of control/discipline, boys received 81% of observed interactions, 30% more than expected. In the category of criticises unsuccessful student, boys received 77% of the interactions, 26% more than expected. In the category of points out student model, boys received 19% more interactions than were expected. These percentages display evidence of substantial gender inequity.

Teacher interactions in the categories of physical contact, encourages unsuccessful student and formal talk were the only categories in which girls received more interaction than expected, however, the discrepancies in these areas were minor, informal talk registering the highest percentage difference in observed interactions of 8%. The percentage of interactions in the category of praises unsuccessful student was consistent with expected percentages for both boys and girls.
In the language section, all three categories indicated that boys received higher observed percentages of interaction than expected. Teachers used terms such as "fellows" or "guys" when addressing groups of male students, and terms such as "ladies" and "girls" when addressing groups of female students. Student names were most often used when addressing individual students with boys receiving a much higher observed percentage (70%) than girls (30%).

These findings do not totally parallel those of Rate (1987). In her study, boys were observed participating 10% more than expected. 54% of the leaders observed were boys, this was 2% less than expected. In this study boys and girls had observed participation interactions similar to those expected. The frequency of observed male leaders was 6% more than would be expected. However, in the categories of control/discipline the findings are similar with Rate (1987) recording an 18% difference between observed and expected percentages of interactions for boys. This study recorded a difference of 30% between observed and expected percentages of interaction for boys. In the category of points out student model, where Rate (1987) recorded an 8% difference for boys in the observed percentage as compared with the expected percentage, this study recorded 19%.

The only categories in which girls received more interaction than expected in Rate's (1987) study were praises successful student, physical contact, encourages unsuccessful student, and instruction. In this study three categories recorded higher
than expected interaction for girls, they were physical contact, encourages unsuccessful student, and informal talk, though their percentages, like those in Rate's (1987) study, were low. In Rate's (1987) study the only category with a higher differential between observed and expected percentages for girls was that of encourages unsuccessful student with 12%, contrasting with the 2% found in this study.

In the teacher language section, Rate's (1987) study indicated that teachers had more observed interactions with boys than expected. This parallels the data in this study in the corresponding categories, boys receiving from 19% to 25% more observed interactions than expected.

**Individual teacher analysis of observations**

Individual teacher interaction patterns may be analysed in order to identify if sex role dependent/independent behaviours occur. In Table 3, the data for patterns of interaction was collapsed overall, providing information about overall differences in participation, interaction and language usage. However, if individual teachers had opposite patterns of interaction, such a collapsing of data may mask vital information. Therefore each class was treated individually and the results were analysed for patterns among male and female teachers. Such patterns may suggest generalisations which could lead to further research. Additionally, observations
of the total male teacher frequencies in all categories were compared to the observations of the total female teacher frequencies in all categories.

Initially this analysis was carried out by combining the frequency of observation of each category in all lessons conducted by individual teachers. For each teacher and each category a chi-square value was computed, based on observed and expected frequencies. A chi-square test was used because it has such versatility and is considered to be the best statistical test to determine how great the difference is between the observed and expected data in a category. The use of chi-square as a test of significance permits the testing of several differences at the same time and makes no assumption that the population distribution is normal. Chi-square investigates if a relationship exists among selected categories and determines if membership of one category affects membership of another category. If such a relationship exists the categories are said to be contingent on one another. If the relationship does not exist the categories are said to be independent of one another. For chi-square distributions which have more than one degree of freedom, no more than 20% of the cells should have an expected frequency less than five. (Jongeling 1988) In this study, those categories which did not fit this criterion were not considered significant. Tables 4, 5 and 6 summarise the results of chi-square tests and indicate teachers in whose classes the pattern of
Table 4

Individual Teacher Analysis of Observations

Male

<table>
<thead>
<tr>
<th>Categories</th>
<th>Teacher</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Leaders</td>
<td>-</td>
<td>*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Materials</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rule Changes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td>-</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>-</td>
<td>*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control/Discipline</td>
<td>-</td>
<td>*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praises Successful Student</td>
<td>-</td>
<td>#</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Contact</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages Unsuccessful Student</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal Talk</td>
<td>-</td>
<td>-</td>
<td>*</td>
<td></td>
<td>#</td>
</tr>
<tr>
<td>Criticises Unsuccessful Student</td>
<td>*</td>
<td>*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Points Out Student Model</td>
<td>*</td>
<td>*</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>Sex Role Dependent Comment</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>Sex Role Independent Comment</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Pronouns</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Names</td>
<td>-</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refers to Males/Females</td>
<td>*</td>
<td>-</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Boys score significantly higher than girls score (p < .05)

# Girls score significantly higher than boys score (p < .05)
Table 5

**Individual Teacher Analysis of Observations**

**Female**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Participation</td>
<td>#</td>
</tr>
<tr>
<td>Leaders</td>
<td>-</td>
</tr>
<tr>
<td>Curriculum Materials</td>
<td>-</td>
</tr>
<tr>
<td>Rule Changes</td>
<td>-</td>
</tr>
<tr>
<td>Instruction</td>
<td>-</td>
</tr>
<tr>
<td>Management</td>
<td>-</td>
</tr>
<tr>
<td>Control/Discipline</td>
<td>-</td>
</tr>
<tr>
<td>Praises Successful Student</td>
<td>-</td>
</tr>
<tr>
<td>Physical Contact</td>
<td>-</td>
</tr>
<tr>
<td>Encourages Unsuccessful Student</td>
<td>-</td>
</tr>
<tr>
<td>Informal Talk</td>
<td>-</td>
</tr>
<tr>
<td>Criticises Unsuccessful Student</td>
<td>-</td>
</tr>
<tr>
<td>Points Out Student Model</td>
<td>*</td>
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<tr>
<td>Sex Role Dependent Comment</td>
<td>-</td>
</tr>
<tr>
<td>Sex Role Independent Comment</td>
<td>-</td>
</tr>
<tr>
<td>Use of Pronouns</td>
<td>-</td>
</tr>
<tr>
<td>Student Names</td>
<td>*</td>
</tr>
<tr>
<td>Refers to Males/Females</td>
<td>-</td>
</tr>
</tbody>
</table>

* * Boys score significantly higher than girls score (p < .05)
* # Girls score significantly higher than boys score (p < .05)
frequencies are significantly different from expected frequencies in all categories. This method of analysis allows a meaningful individual analysis of observed patterns of teacher behaviour. All categories in Tables 4, 5 and 6 were determined by the chi-square test to be independent of one another.

In most lessons, patterns of teacher behaviour were similar, all teachers focussing the majority of their interactions toward boys. One female teacher in one category (participation) had more significant differences in interaction favouring girls. Two male teachers favoured girls significantly in two categories (praises successful student and informal talk). Overall the majority of female and male teachers significantly favoured boys over girls in most categories. Some teachers significantly favoured boys in more categories than others. For example, the data of male teacher two in Table 4 indicates that in seven out of eight significantly different categories boys were favoured. Male teacher three had five significantly different categories, and teacher one had three significantly different categories, all favouring boys. In contrast, male teacher four had an equal number of significantly different categories favouring boys and girls. Table 5 indicates that female teachers two, three and four all had significantly different categories all favouring boys. Teacher one had one category favouring girls, with two favouring boys. Also in Table 5, all female teachers
significantly favoured boys in the student name category.

Table 6 combines all male teachers' data together with all female teachers' data. The data in all eighteen categories from both male and female teachers indicates that in only one category (rule changes) significant differences in interactions favoured girls. Male teachers displayed significant differences in interactions in eight of the eighteen categories. Of these, only one category significantly favoured girls, with seven favouring boys. Female teachers displayed significant differences in interaction in six of the eighteen categories, with all data significantly favouring boys.

The particular categories for which consistent sex role patterns were evident were for control/discipline, points out student model, and student name. This supports the evidence presented in Table 3, but adds insight because the data in Tables 4 and 5 demonstrate that these differences were consistent over most teachers rather than the differences reflecting the behaviours of one or two teachers. Five of the teachers interacted with boys at a significantly higher level than girls for the category control/discipline. Six teachers used boys' names at a significantly higher rate than girls'. For the category points out student model the interaction patterns were evenly spread between two male teachers and two female teachers, all having significantly higher rates of interaction with boys when choosing students as demonstrators. In the category of praises unsuccessful student, the only
Table 6

**Total Teacher Analysis of Observations**

**Male and Female**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Leaders</td>
<td>-</td>
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<tr>
<td>Curriculum Materials</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rule Changes</td>
<td>#</td>
<td>-</td>
</tr>
<tr>
<td>Instruction</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Management</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Control/Discipline</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>praises Successful Student</td>
<td>-</td>
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</tr>
<tr>
<td>Physical Contact</td>
<td>-</td>
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<tr>
<td>Encourages Unsuccessful Student</td>
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<tr>
<td>Informal Talk</td>
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</tr>
<tr>
<td>Criticises Unsuccessful Student</td>
<td>*</td>
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<tr>
<td>Points Out Student Model</td>
<td>*</td>
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</tr>
<tr>
<td>Sex Role Dependent Comment</td>
<td>-</td>
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<tr>
<td>Sex Role Independent Comment</td>
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</tr>
<tr>
<td>Pronouns</td>
<td>-</td>
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</tr>
<tr>
<td>Student Name</td>
<td>*</td>
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</tr>
<tr>
<td>Refers to Males/Females</td>
<td>*</td>
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</tr>
</tbody>
</table>

* Boys score significantly higher than girls score \( p < .05 \)

# Girls score significantly higher than boys score \( p < .05 \)
significant interaction difference was to girls by a male teacher. Two of the male teachers and one of the female teachers displayed significantly higher rates of interaction towards boys when criticising unsuccessful students.

In Table 6 significant interactions were displayed by both male and female teachers in eight of the eighteen categories. Six of these categories were equally significant to both male and female teachers, these categories included management, control/discipline, criticises unsuccessful student, points out student model, student name and refers to males/females. Categories with significant interactions which were peculiar to male teachers only were instructions and rule changes. The category of rule changes was noteworthy as it is the only category where observed interaction was more significant in favour of girls.

Tables 4, 5 and 6 indicate that in most categories in which a significant difference occurred, both male and female teachers favoured boys. This information is evident in Table 3, and is enhanced by Tables 4, 5 and 6.

Qualitative results from field notes

The qualitative data was supplemented by written comments which could not be coded into a particular category by the observation instrument. Examples of sex role dependent/independent
teacher or student behaviour were noted by the researchers and recorded as anecdotal comments and field notes. For example, the participation category of the instrument only allowed recording of the frequency of contact with the ball. In a modified game of netball there were sex differentiated patterns within the game. There were no specific positions nominated for players by the teacher but it was observed that the boys generally took shots and the girls usually passed the ball to the boys to shoot, as the boys frequently placed themselves under the goal or within the scoring zone. If a boy and a girl were to go for a loose ball simultaneously, the girl tended to hesitate, allowing the boy to take possession of the ball. This allowed the boys to dominate game play, often despite inferior numbers. During game play boys preferred to pass to boys, even if the receiver was not in a good position. Boys tended to wait until another boy was within passing distance before throwing the ball, rather than pass to a girl who may have been closer. Although the boys were fewer in number in each team (two boys/five girls) on one occasion, six consecutive passes went to boys. Girls, however, demonstrated no preference when passing in general play, no passing pattern involving girls was able to be identified by either the researcher or field assistant.

In some team games, the different spatial positioning of boys and girls was noticeable. In a game of T-ball the girls tended to move to the periphery of the game or the rear of the
field. The boys took the defensive positions around the batter, and guarded the bases. Girls tended not to run after the ball, even if it touched their hand as it passed them, allowing the boys to run and field the ball. When going for a catch girls hung back, not sure of what to do, allowing the boys to come in and catch the ball. On one occasion a girl was injured by the ball because of her tentative approach to a catch. This resulted in another girl, fielding close to the batter (as directed by the teacher), to hide behind another fielder, or lay on the ground when the batter hit the ball. The teacher then moved her from the position, placing a boy there instead. The boys, however, were more assertive and positive in game play. They were alert when fielding and attacked the ball. Girls were far more tentative when batting, approaching the ball nervously, hitting the ball with little power, thereby achieving short distances with a hit. The boys, on the other hand, strode to the plate with confidence and struck the ball with power and dexterity.

During activities which involved skill practice, with less emphasis on competition, girls participated at a more responsible level than the boys. In a softcrosse activity, when cradling the ball with the stick, the boys tried to hit seated students with the handle of the stick while girls concentrated on achieving the skill level desired by the teacher. In a football handpass activity, the girls participated with maximum effort without teacher intervention.
or encouragement. The boys were less responsible, engaging in off-task behaviour when out of sight of the teacher. Similarly, in a lesson involving activity stations, the boys participating at stations unobserved by the teacher consistently failed to continue the activity while the teacher was involved with other groups. However, the girls at such stations maintained conscientious participation throughout the lesson. When the element of competition was added, however, the boys aggressively participated in order to "beat the girls". Most of the students engaged in the activities when the element of competition was added.

In a football handpass lesson, the girls' level of enthusiasm to the activity was low until the element of competition was added. At this point the girls became highly competitive and participated aggressively, stating that they "wanted to beat the boys at their own game", which they then did. One girl, however, removed herself from the activity, unobserved by the teacher. She sat behind the researcher for the remainder of the game, returning only at the conclusion of the lesson. The teacher did not question her action.

There were numerous examples of non-assertive behaviour exhibited by girls during physical education lessons. This type of behaviour was particularly characteristic of less skilled girls who were more likely to give up, hang back or not participate. Girls were the only students who produced notes or excuses for non-participation in classes. This was
apparent in a hand-tennis lesson when the teacher discussed the organisation of a competition to be held at lunch times. Girls expressed the desire to opt out of the competition, asking if they could help the teacher to score or set up the equipment.

The warm-up activities seemed to set the standard for the lesson. Many warm-ups consisted of a run around the oval. The girls expressed displeasure with this activity, walking and chatting with their friends, as they rounded the oval. This behaviour then continued throughout the lesson. In contrast, in lessons where teachers utilised inventive warm-up activities which motivated the children, this pattern of behaviour did not develop and the girls' participation remained enthusiastic throughout the lesson.

In a basketball skills lesson, those girls demonstrating poor skill levels became objects of ridicule for the other students in their groups. This caused them to become despondent and they then refused to even attempt the skill, forfeiting their place in the line in order to avoid practice. The boys, in contrast, continued to try despite lack of success, often laughing off the criticisms of their peers and not allowing their lack of ability to affect their self-confidence.

Girls did not play assertively unless they were skilled. This was apparent in a netball lesson where girls had previous
experience and better skills in some cases than the boys. The girls in this instance played assertively and were conscious of and utilised tactics in their game play. One girl who was appointed team captain, possessed good skills and displayed a considerable knowledge of the game. She competently organised the positioning of her team members, both boys and girls, and when participating in the game, organised plays and attacked the ball with vigour. Boys and girls in her team readily accepted her leadership. In an educational gymnastics lesson, girls' skills and ability to apply their skills in a routine, exceeded that of the boys. In small group activities where students were instructed to invent their own routine using specified movements, the girls performed the task with confidence and poise, prompting the remark from the teacher "Just as well we have some athletic girls. Well done girls, you have plenty of control".

In an activity in which several groups of girls were performing with high skill levels, the teacher attempted to re-arrange the group asking several girls' groups to include one boy (who had demonstrated a lower skill level). Despite considerable teacher pressure, the groups of girls resisted the inclusion of the boy, demonstrating assertive behaviour by girls with high skill levels.

The anecdotal records and field notes recorded during observations have provided extremely useful supplementary information, complementing and supporting the quantitative data
in the tables. Similar participation patterns were observable for boys and girls. Girls participated in a more responsible manner, and those with high skill levels demonstrated assertive behaviour. Boys participated well, though there were many examples of off-task behaviour and a lack of responsibility. Skill levels varied in boys also, though their reactions to players who demonstrated a lower skill level was somewhat different to the girls. Girls tended to maintain peripheral positions in games and activities, especially when their skill level was inferior. In addition, their hand-eye co-ordination was generally poor in games involving ball skills. Their conduct during group activities was less disruptive than boys, providing less control and discipline problems for the teacher. It is possible that the similarity of participation patterns observed could be attributable to the type of activities engaged in, the non-competitive nature of the activities and the emphasis on maximum group participation which promotes whole class involvement rather than highly competitive game play.
CHAPTER 5

SUMMARY, DISCUSSION AND IMPLICATIONS OF THE STUDY

Summary

The major intention of this study was to examine sex role dependent and sex role independent teacher behaviour in co-educational primary school physical education lessons. The integration of boys and girls in physical education lessons does not necessarily ensure the occurrence of sex equity, although this is the intention of sex integration. There is a need to analyse whether sex stereotypic patterns of teacher-student behaviour are present in the areas of student participation, interaction and teacher language. The results of this study are important in order to assist teachers in designing sex fair programmes in physical education and to determine the extent to which equality of participation, interaction and teacher language in lessons can be achieved. This will assist teachers to be more aware of inequitable interaction patterns and make a commitment to change.

A second outcome of this study was to evaluate the modifications to the Sex Role Dependent/Independent Teacher Behavior Observation System designed by Griffin (1980) (Appendix 2), and to determine if it was effective in providing descriptive information about teacher behaviour related to sex role dependence or independence. Additionally the refinements in reducing the number of categories were examined in order to
determine if a greater frequency of recorded observations in
the specified categories did occur providing data which was
more relevant to teachers.

The final outcome of this study was to provide a
descriptive observation instrument which will provide
information to teachers about sex equity in their lessons.
The modified Sex Role Dependent/Independent Teacher Behaviour
Observation Instrument will enable teacher educators to inform
pre-service and in-service teachers on how to become more aware
of sex equity issues in primary school physical education.

One primary school in the Perth metropolitan area was
selected as representative of Perth metropolitan schools
utilising a comprehensive and effective sex integrated
school-based physical education programme. A total of eight
teachers were observed teaching their own classes in a typical
school environment. Each lesson was recorded on videotape and
analysed later using the Sex Role Dependent/Independent Teacher
Behavior Observation System designed by Griffin (1980). Three
categories of teacher behaviour related to sex equity were
analysed, namely class organisation strategies, teacher-student
interaction and teacher language. In the class organisation
section, the observed active participation rates of boys and
girls were similar, in contrast to the inequitable teacher
behaviour observed in the interaction and language sections.

Several categories displayed significant differences in
observed teacher interactions with individual students and
groups, thus establishing the continuance of sex inequitable patterns of teacher-student behaviour. For example, teacher interactions in the category of control/discipline and criticises unsuccessful student were continually directed towards boys. They were observed being disciplined 30% more than expected, and criticised 26% more than expected. Though these interactions were of a negative nature, they did not discourage the participation of the boys. The teachers' attention however, was excessively directed towards boys to the exclusion of girls, indicating differentiated treatment of interactions. This demonstrates that girls are disadvantaged through the teachers' need to devote considerably more time to boys. Whether such interactions are positive or negative is irrelevant, the effect is to deprive girls of their share of teacher interactions. The teacher language section indicated that teachers used boys' names or referred to males/females more extensively than expected. Boys were observed receiving 19% more interactions than expected in the student name category, and 25% more observed interactions in the refers to males/females category. Such terms as "fellow" or "mate" were used frequently by teachers when addressing male students in contrast to the limited use of "girls" or "ladies" when addressing female students.

A second purpose of this study was to evaluate the modifications to the Sex Role Dependent/Independent Teacher Behavior Observation Instrument (Griffin, 1980) and to
determine if they were effective in providing descriptive information about teacher behaviour related to sex role dependence or independence. Although some coding difficulties still occurred, they were unrelated to the modifications. The difficulties encountered related rather to technical procedures involving the video taping of lessons. The modifications were effective. The reductions in the number of categories did not reduce the effectiveness of providing descriptive information about teacher behaviour related to sex role dependence or independence. The refinements resulted in greater frequency of recorded observations in the remaining categories and resulted in the researcher encountering fewer difficulties when coding observations thus increasing the reliability of coding because there are fewer categories. Both Griffin (1980), and Rate (1987) had categories in which no interactions were registered. This did not occur in this study. The recording of each lesson of videotape enhanced the effectiveness of coding of all interactions, with the observation instrument. It also increased the reliability and validity of observations while using the instrument and allowed the researcher to code accurately the frequency of all interactions observed.

The modified observational instrument provided an effective and functional measure of sex role dependent/independent teacher behaviours in physical education lessons. The reduction of categories assisted coding and this would facilitate the utilisation of the instrument by teacher educators in pre-service and in-service teacher education programmes.
**Discussion**

The findings of this study support the findings of Rate (1987) and Griffin (1980), indicating that the integration of physical education lessons does not eliminate sex inequity. The teacher-student interaction patterns of boys and girls which occur within physical education lessons may disadvantage girls, contributing to lower skill levels and a negative attitude towards physical education. The results of this study of eight teachers has suggested that boys are significantly favoured in the interaction section categories of control/discipline, criticises unsuccessful student, and points out student model. In the language section a similar tendency was recorded in the categories of student names and refers to males/females. In contrast, teachers interacted more than expected with girls in the categories of encourages unsuccessful student and informal talk. As these were the only areas in which girls were favoured in interaction, such interaction may promote negative expectations of girls' performance ability. This is in agreement with Solomon's (1977) research which noted that teachers of physical education had different expectations for boys and girls. She asserted that girls were "praised for their effort" while boys were "praised for their performance". Teachers' tendency to praise girls more than expected for their unsuccessful performance is likely to reinforce lower levels of skill performance for girls.
These patterns have been identified in this research and a number of others (Solomon (1977), Griffin (1980), Rate (1987)) demonstrating that this behaviour was widespread in the past and is still observable. Further research is needed to determine what effect this type of teacher interaction has on the levels of girls' confidence in skill performance and how this is related to girls' participation patterns.

However, the findings of this study contrast with the findings of Griffin (1980) and Rate (1987) in the category of student participation in the class organisation section. This may be attributable to the nature of the activities engaged in during observed lessons, rather than the influence of teacher expectations. The expectations of the teachers observed in this study parallel those examined by Rate (1987). In the category of encourages unsuccessful student, both studies evidenced significant interactions in favour of girls. Additionally in the category of criticises unsuccessful student, the interactions significantly favour the boys in both studies. However, the participation patterns in this study demonstrated equitable interactions in both boys and girls, in contrast to Rate's study (1987) as the activities emphasised maximum participation, rather than skill performance in competitive team games. This encouraged both boys and girls to actively participate at equal rates, irrespective of skill level and teacher expectation. The equality of the patterns in the
participation category of the class organisation section was not evidenced in the sections of interaction and language. An analysis of the other categories in the class organisation section also provides evidence of inequitable teacher interaction behaviours (Chapter 4, Table 3). Sex role stereotypic patterns of teacher behaviour are evident with boys being significantly favoured in seven categories of the eight significantly different categories (Chapter 4, Table 6). Girls however, were significantly favoured in one of the eight categories with significant differences. There was no major variation in the observed interaction patterns of male and female teachers, the boys being favoured by all teachers.

It appears that teachers were oblivious to these inequitable interaction patterns. Therefore, it seems imperative that an awareness of and subsequent elimination of these inequitable patterns be initiated. A high level of consciousness and commitment to change on the part of teachers should be a priority. However, encouraging teachers to develop a commitment to change provides a considerable challenge. The utilisation of Griffin's (1980) instrument could allow the development of an awareness of the teacher's style of teacher-student interaction and if this is conveyed to the teacher it may result in a positive measure to correct unequal interaction.

The Sex Role Dependent/Independent Teacher Behavior Observation Instrument (Griffin, 1980) can be used to describe differential teacher-student interaction and student
participation patterns. The data reported in this research has shown that the instrument can identify interaction, participation and teacher language patterns that are sex role dependent or independent. However, it was suggested by Griffin (1980) and later by Rate (1987) that refinements to the instrument would increase its ease of use and effectiveness. It was reported that sex role related categories of the interaction section were low frequency items. The retention of these categories was questioned. Nevertheless, although such comments may be used sparingly, their impact on the students was acknowledged. It was recognised that if teachers were to increase the frequency of sex role independent comments and decrease the frequency of sex role dependent comments, an argument could be made that both categories should be retained to record these changes and enhance the awareness of these behaviours.

Rate (1987: 48) suggested "one way of addressing this issue of low frequency occurrences among these sex role related categories without losing potentially significant data is to combine the sex role dependent categories" into one category and also in the same manner the sex role independent categories could be reduced to one category. These modifications (Appendix 2) were implemented in this study.

The reductions of the categories resulted in no data loss. The category frequency related to sex role dependent or independent comments was increased and the total number of
categories in the instrument was decreased. This simplified the researcher's task of locating categories while observing interactions during coding. In order to enhance coder reliability, the content of each sex role related comment observed was written on the coding sheet or in the field notes. The recording of data on videotape also allowed the researcher to replay these comments if necessary in order to ensure interpretation and frequency of coding was accurate. These modifications proved effective in simplifying the coding of the observation instrument. The accuracy of recording all frequencies of data was increased by using a video camera and wireless microphone. All lessons were videotaped and sound recorded with minor problems encountered by the researcher. The video tapes proved invaluable when coding of information took place. Each lesson was able to be watched as many times as necessary in order to code the frequency of all interactions in each section accurately. This substantially increased the reliability of the analysis of recordings and provides a permanent record which can be scrutinised by future researchers or interested teachers.

The observation instrument used in this study provided an excellent basis for the observation of sex role related teacher behaviour. The addition of field notes however, considerably enhanced the accuracy and frequency of data recorded. Student behaviours in sex integrated physical education lessons are extremely complex and often could not
be adequately recorded in the frequency data categories. Therefore the use of a field assistant who recorded extensive anecdotal comments made by both teachers and students proved extremely effective. This data supplemented the information collected by the observation instrument and the videotaped recordings, and assisted with identification of behaviours not easily categorised when coding. The field notes provided greater understanding of teacher-student interaction patterns which the coding instrument could not otherwise provide. The modifications can provide descriptive information to teachers about sex equitable interaction.

Providing teachers with this specific behavioural information is a first step in increasing awareness, but teachers also need extra assistance to develop an effective strategy to change. An approach which could be employed to positive effect is Action Research. As described by Grundy and Kemmis (1981: 536), Action Research involves "strategies of planned action which are implemented, and then systematically submitted to observation, reflection and change. Participants in the action being considered are integrally involved in all of these activities". This strategy of research could be employed to initiate change in teacher's interaction patterns using Griffin's (1980) instrument.
Implications of the study

This study has reinforced past research and established the current status of sex equity in sex integrated primary school classes. It appears that sex stereotyped behaviours during physical education lessons are still exhibited by many teachers. This research has shown that an appropriate and effective means of monitoring teacher-student interaction and to promote change in teacher behaviour would be to use a systematic teacher behaviour observation instrument. Once these behaviours are identified, it would be necessary to design and implement strategies to change these specified behaviours. This type of programme could take the form of Action Research, conducted by a qualified researcher or interested teachers within their own school environment. Observations could be conducted using the observation instrument, an intervention programme implemented, resulting in further observation of teacher behaviour and finally re-evaluation strategies utilised in order to address the identification of sex role dependent teacher behaviours which require attention.

Another major cause for concern that became obvious in the analysis of the results of this study is that it is possible that adjustment of teacher behaviour would not entirely eliminate the sex biased behaviours demonstrated. Despite highly professional behaviour, a caring and considerate
Implications of the study

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Another major cause for concern that became obvious in the analysis of the results of this study is that it is possible that adjustment of teacher behaviour would not entirely eliminate the sex biased behaviours demonstrated. Despite highly professional behaviour, a caring and considerate
attitude, and expressed concern for the area of gender equity, the teacher behaviours observed were substantially different in the areas of control/discipline and criticises unsuccessful student from the expected percentages. These results indicate that the problem does not lie entirely with teacher behaviour, but also with student behaviour. One possible solution would be to sex segregate physical education classes. This would allow the girls a far more equitable share of teacher interaction. In addition such segregated classes would then allow for grouping on ability levels, an area which appeared to be badly neglected in this study. If the range of choice of activities remains unrestricted it is felt that such a segregation could be very beneficial to all students.

Alternatively, teachers could group students according to their ability in sex integrated classes, combining boys and girls with high skill levels, and boys and girls with low skill levels. This would allow all students of equal ability to have a more equitable share of teacher interaction.

While recording anecdotal comments made by teachers to students a requirement for change became evident in post-lesson observations. At the conclusion of some lessons, when on-going activities were being planned, girls occasionally approached the teacher to ask to be excused from such activities. Alternative tasks were arranged, but these were of the "housekeeping", non-participant variety, rather than alternative active involvement. It was regrettable that the need to redirect
such students into active participation remained unperceived by the teachers. It is apparent that an attitude change is required in teacher perception, towards encouraging girls to be more assertive and active in participation in physical education activities.

Such attitude changes may be effected through pre-service and in-service teacher educational curricula designed around the instrument. Describing what is actually happening through objective observation will help teachers assess their sex role stereotyping behaviour accurately and provide specific guidelines for change. Pre-service and in-service teachers could effectively use this observation instrument as part of a teacher education programme to help them become more aware of sex equity issues in physical education. This type of programme would help them to plan and evaluate specific personal actions to change sex role dependent behaviour. Teachers trained in the use of the observation instrument could be enlisted to help colleagues to identify teacher behaviours which were sex stereotyped, resulting in modifications to their teaching techniques, enabling physical education to be equitable for all students.
APPENDIX 1

SEX ROLE DEPENDENT/INDEPENDENT TEACHER BEHAVIOR

OBSERVATION SYSTEM

CODING MANUAL

From Developing a Systematic Behavior Observation Instrument to Identify Sex Role Dependent and Sex Role Independent Teacher Behavior in Physical Education Classes. Pat Griffin, Doctoral Dissertation, University of Massachusetts, Amhurst, 1980.
This observation instrument is designed to identify sex role dependent and sex role independent teacher behavior in physical education classes. Sex role dependent behaviors are actions or comments that expect, reinforce, or accept traditional sex role stereotypic behavior in males and females. Sex role independent behaviors are actions or comments that reject or discourage sex role stereotypic behavior for males and females.

This observation instrument is intended to be used as a teacher training tool to:

1. Increase teacher awareness of sex role stereotyping in the classroom.
2. Provide objective information to teachers about their sex role independent and sex role dependent behavior.
3. Provide specific guidelines for self directed change in sex role dependent and sex role independent behavior.
4. Measure changes in teacher sex role dependent and sex role independent behavior.

The instrument is divided into three sections. These are class organization, interaction, and language.

Class organization. This section provides a context for observing teacher sex role dependent/independent behaviors. Student participation patterns, class groupings, class leaders, curriculum materials used, and rule changes all
provide information about class structuring by the teacher and the effects of this organization on equitable male and female student participation in class.

**Interaction.** This section provides information on the frequency and kind of teacher interactions with female and male students. Nine of the interaction categories in this section are sex role neutral. That is, they are only related to sex role stereotyping if it becomes evident in observation that the teacher interacts with differential frequency and in differential ways with male and female students. Seven of the categories are inherently sex role related. Whenever they occur the teacher is either reinforcing or freeing students from sex role stereotypic expectations.

**Language.** This section provides information on how a teacher uses language in the classroom that is either sex role dependent or sex role independent.

**Coding Definitions and Rules**

**Class Organization**

**Section 1**

1. **Participation.** Begin with the first teacher organized student participation. For 30 second intervals every three minutes during a class, count the number of active participation units by boys and by girls in the class or in a sub-group of the class. During this 30 seconds, only student participation is coded. If the last 30 second interval is interrupted by the end of class, that interval is not counted in the participation data.

   A. If the entire class is active in one game or activity
count the active participation units by girls and boys in the game or activity during each 30 second interval.

B. When several games or groups are active independent of each other within the class, begin the first 30 second observation with the group nearest to the observers. On each successive 30-second observation, record a new group moving in a counter-clockwise direction. Repeat observation of the first group when all groups have been observed once and continue the cycle moving to new groups in a counter-clockwise direction. Indicate the group observed for each 30 seconds by recording the group number from the group category.

C. If groups change during class, begin observations again with the group nearest the observers and proceed as before.

Active Participation Units

A. For team games with a ball (basketball, volleyball, soccer, softball, frisbee) count the number of times boys and girls play the ball within the context of the game or attempt to execute a game skill in a drill. If a game uses more than one ball, code contacts with the ball closest to the observers when the 30 second observation interval begins.

Do not code:

1. Accidental contacts with the ball.
2. Retrieving the ball from out of bounds.
3. Returning a ball to the server.
4. Tossing the ball to a partner who is practising a skill.
5. Slaps or uncontrolled contacts with the ball.

B. For tennis or badminton doubles, count as in team sports.

C. For tennis or badminton singles, swimming, dance, calisthenics, or warm up exercises, count the number of males and females actively participating in the activity during the 30 second observation.

D. For gymnastics, circuit training, weight training, fitness or other individual activities with stations, count the number of females and males actively participating at each station or piece of equipment. Begin with the station nearest the observers and move counter-clockwise for each successive observation.
2. **Groups.** Note the number of participation groups organized within the class. These may be games, practice, or drill groups.

   A. Indicate whether each of these groups is sex integrated or sex segregated.

   B. Indicate who structured or chose the groups. If it was the teacher, write "T" in the "structured by" column. If it was the students, write "S" in this space. If it is evident that the groups were chosen before class, ask the teacher after the class ends who structured the groups.

   C. If groups change or are reorganized during class, record the new groupings as separate groups. Ex. When substitutions are made in a game.

   D. If possible, provide a brief description of how the groups were formed in the space "structured by". Ex. Captains pick teams

      Teacher chooses teams

   E. Indicate the group number being observed or each of the 30 second participation observations in the participation group column on the coding form.

3. **Leaders**

   A. Count the number of males and females designated as leaders in the class. Ex. Teacher assistants, squad leaders, team captains, drill leaders, head of a drill or practice line, calisthenic leaders, recorders for grades, scores on tests.

   B. Indicate whether the leaders were chosen by the teacher (T) or students (S) in the space "structured by" on the form.

   C. If possible, provide a brief description of how the leaders were chosen. Ex. Students elect, students volunteer.

4. **Rule changes.** Indicate the number of times the teacher changes rules or restructures groups, practice, procedures, or positions in a game with the explicit purpose of equalizing female and male participation. The teacher must state this purpose to the students or to the observer.
Ex. Requiring alternating passes to males and females. Having a penalty for poaching. Switching students playing high and low interaction positions (infield and outfield). Temporary rule changes: boys must set up girls for spikes.

Interaction

Section 2

General Rules: 1. Only code interaction when the teacher is in sight of the coders. For example, teacher goes into the equipment room or locker room.

2. Do not code teacher interactions with other teachers, student teachers or student aides.

3. Do not code unintelligible or inaudible interactions.

1. Instruction

A. The teacher gives information to an individual student about skill execution, strategy, rules, or equipment use. The teacher asks an individual student about skill execution, strategy, rules, or equipment use.

B. When the teacher encourages a participating student.

C. The teacher calling out student times or performance scores are not coded.

D. Do not code officiating calls made by the teacher. If the teacher elaborates or explains the call to an individual student, this should be coded.

Coding: One for the entire instructional interaction. If the teacher changes focus to speak to another student, this ends the instructional interaction. If the teacher then instructs the first student again, code another instructional interaction for that student. If the teacher uses another category with the same student, code this. If the teacher then instructs the same student again, code another instruction. Code each instructional interaction to a male in the male column and each instruction to a female in the female column.
If a student initiates the instructional interaction, mark an "S" in the appropriate column.

**Examples:**
- Step into the ball, Susan.
- John, you’re guarding her too closely before she dribbles.
- Aim for his backhand, Linda.
- Tina, where should you be trying to place the ball?
- If you're tagged off the base, John, you're out.
- Sprint, Steve.
- Come on, Mary, go, go, go.

2. **Management.** The teacher speaks to an individual student about class organization, equipment set up, directions for practice or playing a game, asks the score of a game, asks about student performance or score, asks about an injury that occurred in class, gives directions to a student for safety.

   Coding: One for each interaction to an individual student. Record in the male or female column accordingly. Code "S" for student initiated interaction.

   **Examples:**
   - What's the score on court 3, Sue?
   - Has everyone played on your team, Mike?
   - You practise on court 5, Tom.
   - Steve, will you collect the balls please?
   - Eve, you belong in that drill line.
   - Go again, Kate, I didn't see you.
   - Here you go, Lisa. (Tosses ball to student.)
   - What was your time, Elaine?
   - Mike, don't jump off the top of the bleachers, you might get hurt.

3. **Controls/discipline.** The teacher verbally warns, threatens or controls a disruptive or inattentive student.

   Cautions for safety are not control/discipline interactions.

   Coding: One for each control interaction with an individual student. Record in male or female column according to student addressed.

   **Examples:**
   - Cool it, Karl.
   - Steve, sit down and be quiet.
   - Gwen, stop talking please.
   - Art, wait your turn.
   - Do you want to sit out, Janet?
   - Roll the ball, Mike, don't throw it.
   - Watch where you throw that!
4. **Praises successful student.** The teacher verbally recognizes an individual student for successful execution of a skill or for giving the correct answer to a question or the teacher compares the student to an ideal model. "OK" and "all right" are not coded unless it is clear from the teacher's voice inflection that it is meant as praise.

Coding: One for each praise to an individual student. Record in male or female column according to the student addressed.


5. **Physical contact with student.** The teacher touches an individual student. It may be informal or as part of skill instruction, control, or management.

Coding: One for each physical contact with an individual student. Record in male or female according to the student touched. Code "S" if the student initiates the physical contact.

If a student touches the teacher and the teacher returns the touch, code each.

Do not code if a teacher touches every student (walks down a line of students and touches each to indicate a team).

Examples: Placing a hand over a student's hand to direct the correct racket swing. Placing a hand on a student's shoulder when talking to her/him. Physically restraining a student. Directing a student to a position with a hand on his/her back. Fanny slaps, hair tousles, taps. Checking an injury. A student touches a teacher's arm to get her/his attention.

6. **Encourages unsuccessful student.** The teacher makes a positive verbal response to an unsuccessful individual student attempt at performing a skill or answering a question. "OK" and "all right" are not coded.
Coding: One for each encouragement to an individual student. Record in the male or female column according to the student addressed. Code "S" if the student asks for teacher feedback.

Examples: Nice try, Laurie.
You're getting closer, Steve.
You're beginning to get the hang of it, Mike.
Almost, Sue, just a little higher.

7. Informal talk. The teacher talks to an individual student about topics unrelated to skill instruction or other class related content. Praises or instructs a student about an activity unrelated to class. Greets a student entering the teaching area. Do not code any interactions about the microphone or observers.

Coding: One for each informal talk to an individual student. Record in male or female column according to the student addressed. Code "S" if the student initiates the informal interaction.

Examples: So, Fred, are the Sox going to take it this year?
Have you been watching the olympics?
New tennis shoes, Mary?
It is hot in the gym today, huh?
OK, Tom, we can get this point (teacher playing)
You ranked in the top ten in your class ranking Sue. Nice going.
Hi, Steve. How are you today?

8. Criticizes unsuccessful student. The teacher verbally expresses a negative response to an individual student unsuccessful skill attempt. There is no instruction. It may be teasing, joking, or sarcastic.

Coding: One for each criticism to an individual student. Record in the male or female column according to the student addressed.

Examples: No, no, Steve, that's all wrong.
No, Alice, not like that.
That's the worst play I've seen all day.
Got a hole in that racket, John.
Graceful as a cow, Pat.
Tom, your time was about a day and a half.
Give up while you're ahead, Sue.
9. **Points out student model(s) or demonstrator(s).**  
The teacher verbally singles out one or more individual students as skill models or asks one or more students to demonstrate or help demonstrate skills to the rest of the class. This may be a positive or negative model.

Coding: One for each student singled out. Record in the male or female column according to the student(s) addressed. If the students volunteer to demonstrate, code "S". If the model is singled out because it is unsuccessful or incorrect, code "U".

**Examples:**  
Watch Pam, her serve is terrific.  
Mark, hit some half volleys with me so the class can see some good ones.  
Class, see how Joan swings. That's a problem many of you have. (Code "U")  
Allen, will you come up and help me demonstrate this?  
Sue and Jean, will you show the class a forward roll please? (Code 2)

10. **Discourages poaching:** The teacher discourages or prohibits one student from jumping into another student's territory and attempting to make a play that was clearly the 2nd student's play. (Do not count opponents in a game). The teacher stops students from excluding another student from a rotation system (volleyball). The teacher stops a student from butting in front of another student when taking turns.

Coding: One for each discouragement to the poacher. Record in the male or female column according to the sex of the poacher. If the poachee was a female, code "F". If the poachee was a male, code "M". If a poach occurs and it is clear that the teacher saw it, but did not respond, code "O".

**Examples:**  
John, that was Susan's ball. (Code "F")  
May, Dave called that one. (Code "M")  
Tom, it's Marie's turn to serve. (Code "F")  
Mike, Tanya hasn't been up yet. (Code "F")  
Don't crowd her out, Dan. (Code "F")

11. **Encourages poaching.** In response to a poach, the teacher praises the poacher or criticizes the poachee. This praise or criticism is not coded in categories 4 or 8.
Coding: One for each encouragement to an individual poacher. Record in the male or female column according to the sex of the poacher. Record "M" or "F" according to the sex of the poachee.

Examples: Nice play, Mike (Mike knocks female teammate down to play her ball. Code "F")
Susan, if you can't catch it, back off and let Steve get it. (Code "F")
You have to be more aggressive, Martin. (Code "M")

The following sex role related categories (Numbers 12-17) may be directed to individual students or a group of students. Both are coded.

12. **Sex role dependent comment.** A teacher comment that expects, reinforces, or accepts sex role stereotypic behavior in males and females. Teacher comment that discourages or rejects male or female behavior that is inconsistent with traditional sex role stereotypes. Included in this category are the following:

1. Behavior or performance is linked to sex.
2. Teacher teases a student with a sexual or romantic connotation.
3. Teacher jokes about student to student physical contact in the class.

Coding: One for each comment. Code in the male or female column according to what student the comment was addressed to. If the comment was made to the entire class or a group of students, code "G".

Examples: (After a boy and girl collide with each other going for a ball) Hey, none of that stuff in my class.
Mary Ann throws like a boy.
Mike, you lucky guy. All the beautiful girls on your team.
May I have some strong boys to carry the mats?
Harry, how come you're taking dance with all the girls this six weeks?
(To the only boy in a game with girls) Take it easy on these guys, Dan.

13. **Sex role independent comment.** A teacher comment that rejects or discourages sex role stereotypic behavior for males and females. A teacher comment that encourages
expects, or accepts male and female behavior that is independent of sex role stereotypes.

Coding: One for each comment. Code in the male or female column according to the student addressed. If the comment was made to the entire class or a group of students, code "G".

Examples: (male teacher) Yes, I love folk dancing. I'm team teaching it with Ms Smith next unit. I hope some of you boys and girls will be taking it. I'd like three girls or boys to carry the mats in. All girls and boys taking wrestling come to the main gym. I've changed the name of this game from Spiderman to Spiderperson because both boys and girls are playing. (Code "G").

14. Discourages student sex role dependent behavior. Teacher verbally expresses disapproval of or disagreement with or directs a student to stop in response to a student sex role dependent behavior. (Definition is the same as described in category 12).

Coding: One for each discouragement. Record in male or female column according to the student addressed. If the comment is addressed to the whole class or a group of students, record "G". If there is a student sex role dependent behavior that the teacher clearly saw or heard, but does not respond to, code "O".

Examples: (male student to another male student who is crying): John, if you're going to act like a girl, get off the field.
Teacher: Tom, anyone, boy or girl, who gets hit and knocked down that hard might cry.
Student: Why do the girls have to play?
Teacher: John, the girls want to play as much as you do. Everyone will have a fair turn to play.
Student: Mark throws like a girl.
Teacher: No, Jane, Mark throws like he needs practice throwing. Lots of girls throw well and lots of boys don't.
Student: This is a sissy game.
Teacher: (no comment) Code "0".

(To another student) Student: You faggot.

Teacher: (no comment) Code "0".

15. **Encourages student sex role dependent behavior.** The teacher agrees with, laughs at, or responds to the student making the comment without responding to the sex role dependent content of the comment.

**Coding:** One for each encouragement. Record in the male or female column according to the student addressed. If the comment is addressed to the entire class or a group of students, Code "G".

**Examples:**

Student: Why do the girls have to play?

Teacher: Don't worry Steve, we'll have an all boys game next week.

Student: John throws like a girl.

Teacher: Yes, he needs to snap his wrist more.

Student: This is a sissy game.

Teacher: Oh, come on Tom it's not that bad.

Student: The girls can't serve it over so we're serving for them.

Teacher: OK, if they don't want to.

16. **Discourages student sex role independent behavior.** The teacher teases, jokes about, or does not support a student sex role independent behavior.

**Coding:** One for each discouragement. Record in the male or female column according to the student addressed. If the comment is made to the entire class or a group of students, code "G".

**Examples:**

Student: Who is the third baseperson?

Teacher: Third baseperson? Come on Sue.

Student: Why are the guys always captain?

Teacher: Uh oh, a women's libber in class.

17. **Encourages student sex role independent behavior.** The teacher verbally accepts, reinforces, or seriously acknowledges a student sex role independent comment.
Coding: One for each encouragement. Record in the male or female column according to the student addressed. If the comment is addressed to the entire class or a group of students, code "G".

Example: Student: I'm the third baseperson, not the third base man.
Teacher: You're right, Sue. Thanks for correcting me.

Language
Section 3

1. Use of pronouns

A. Guys. Used to address or refer to:
   1. male and female students in a group;
   2. female students in a group;
   3. the entire class;
   4. a theoretical player or person.

Coding: One for each time "guys" is used in this manner.

Examples: If you guys will take down the nets please. (To male and female students).
          If the guy you're guarding ... (theoretical player).
          Mary, Sue, and Ann, you guys are on team 3 (all females).

B. He/she. Used to refer to a theoretical player or member of the class.

Coding: One each time "he/she" or "him/her" is used.

Examples: Each class member may take as many shots as he or she wishes.
          When your opponent has a weak backhand, hit it to his or her backhand.

C. He/his. Used to refer to a theoretical player or class member.

Coding: One each time the generic "he" or "him" is used in this manner.
Examples: Each class member can take as many shots as he likes.
If your opponent has a weak backhand, hit it to his backhand.

D. She/her. Used to refer to a theoretical player or class member.

Coding: One each time "she" or "her" is used in this manner.

Examples: Each class member can take as many shots as she likes.
When your opponent has a weak backhand, hit it to her backhand.

E. Person. Used when referring to a theoretical player or class member.

Coding: One each time "people" or "person" is used in this manner.

Examples: The person at the net ...
Hit the ball to the person on your right.
You people be on team three.

2. Use of activity terms.

A. Sex role dependent. The teacher uses activity or sport terminology that includes the generic use of "man" or assumes traditional sex role stereotypes.

Coding: One for each activity term that is sex role dependent.

Examples: Man to man defense
Guard your man
Girls push ups
Boys push ups
Third baseman
Spiderman
Third man

B. Sex role independent. The teacher uses activity or sport terminology that is sex neutral or rejects sex role stereotypes.

Coding: One for each activity term used that is sex role independent.

Examples: Player to player defense.
Guard your opponent
Knee push ups
Toe push ups
Third base or third baseperson
Third player
Spiderperson

3. **Calls individual students.** Since most teachers do call students by first names, only exceptions to this are coded.

   A. **Mr.** addresses or refers to male student. Ex. Mr Jones or Mr Smith.

   B. **Miss.** addresses or refers to a female student. Ex. Miss Jones or Miss Smith.

   C. **Ms.** addresses or refers to a female student. Ex. Ms Jones or Ms Smith.

   D. **Last name.** Uses female or male student's last name only. Ex. Smith, get the nets down please. Jones, you're on court 2.

   **Coding:** One for each time an individual student is addressed or referred to in one of the defined categories. When the teacher is calling-off a list of students (for attendance, or teams, or groups) do not code. Instead, indicate in the space under "calls individual students" what the list was and how students were called. Ex. attendance--last names or teams--first names.

4. **Refers to females/males.** The teacher addresses or refers to one or more students in the following ways:

   Calls male students: boys, gentlemen, guys, or men
   Calls female students: girls, ladies, gals, or women.

   **Coding:** One each time one of the names is used. Record under the appropriate column.

5. **Uses sex role dependent name.** The teacher calls a student or group of students a name that accepts, reinforces, or expects sex role stereotypic behavior or rejects sex role independent behavior.

   **Coding:** One for each sex role dependent name used by the teacher.
   Write the name in the space after "uses sex role dependent name."
Example: Tomboy, sissy, macho man, social butterfly, amazon, jock, female jock, boy (to a girl),
girl (to a boy)

Multiple Coding

Sometimes a teacher makes a comment that has more than one coding unit included in the comment. When this happens, all coding units should be recorded.

Coding: One for each part of the teacher comment that fits into a category definition.

Examples: Jon, Sue, stop talking. Code: 2 control/discipline (interaction)
Mike, nice try. Follow through more.
Code: 1 encourages unsuccessful student (interaction); 1 instructs (interaction)
Look out Jimmy Connors. You've got it, Steve. Code: 1 curriculum material (male) (class organization); 1 praises successful student (interaction); touches student and talks to her/him.

Coding Instructions

1. Arrive before the class begins. Note the curriculum material visible in the teaching station. Give the microphone to the teacher. Set up observation in an unobtrusive area to avoid interfering with class instruction and to discourage teacher-observer or student-observer interaction.

2. Fill in the teacher's code number, activity being taught, date of observation, grade level of students, observer name, and reliability observer name. Check to be sure the receiver is picking up the teacher's voice. Get the interval tape ready and put in the ear jacks.

3. BEGIN CODING interactions and language as soon as the teacher and at least one student from the class to be observed are present in the teaching station. NOTE TIME the observation begins on the coding form.

4. Record the number of males and the number of females dressed to participate in the class. Record the number of non-participating females and males (NP) also.
5. When the class begins teacher organized participation, begin coding participation observations. Start the interval tape and record 30 seconds of participation observation. Repeat this process every three minutes. When coding participation during the 30 second interval, do not code language or interactions. The process of observing 30 seconds of participation and three minutes of language and interaction will alternate throughout the observation session.

6. Record the class groups (composition by sex) and who chose these groups during language and interaction observations. Record new groupings as they occur.

7. Record class leaders during language and interaction observations.

8. Record rule changes during language and interaction observation.

9. END CODING when all students have left the teaching station. NOTE TIME the observation ends on the coding form.

Materials: tape recorder, ear jacks, interval tape, spare batteries, vega microphone, receiver, coding forms, clipboard, pencils
APPENDIX 2

THE MODIFIED SEX ROLE DEPENDENT/INDEPENDENT
TEACHER BEHAVIOUR OBSERVATION CODING FORM
### I. CLASS ORGANISATION

#### PARTICIPATION

<table>
<thead>
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<table>
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#### II. INTERACTION

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<th>FEMALE</th>
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</table>

- Instruction
- Management
- Control/Discipline
- Praises Successful Student
- Physical Contact with Student
- Encourages Unsuccessful Student
- Informal Talk
- Criticises Unsuccessful Student
- Points Out Student Model/Demonstrator
- Sex Role Dependent Comment
- Sex Role Independent Comment

#### III. LANGUAGE

<table>
<thead>
<tr>
<th>Use of Pronouns</th>
<th>Guys</th>
<th>He/She</th>
<th>He/Him</th>
<th>She/Her</th>
<th>Person</th>
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<tbody>
<tr>
<td>Use of Student Name</td>
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<td>Ms</td>
<td>Boys</td>
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References


