VERBAL CLASSROOM INTERACTION PATTERNS OF SELECTED SECONDARY SCHOOL HOME SCIENCE TEACHERS WITH THEIR STUDENTS IN NAIROBI PROVINCE

BY

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JULY 2000
DECLARATION

This thesis is my original work and has not been presented for a degree in any other University

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This thesis has been submitted with our approval as University Supervisors.

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To God Almighty.

To my Parents, Jane and Antony in appreciation for the sacrifices they have made for my education and that of their other children.
ACKNOWLEDGEMENT

During the course of this study, different people assisted me in different ways.

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ABSTRACT

This study is an investigation into the variation of verbal classroom interaction patterns of Home Science teachers with their students in girls', boys' and mixed secondary schools in Nairobi Province.

There has been an increasing outcry and concern among the Kenyan society about the general quality of education. This is why Kenya's education system has been undergoing changes to suit the needs and aspirations of the Kenyan society. Although there might be several aspects which determine the teacher effectiveness in the classroom, one of the most important is probably, classroom-teacher-pupil interaction.

This study was guided by the following broad research questions:

(i) What type of teacher-pupil interaction patterns exist in the normal Home Science classrooms?

(ii) Are there significant differences in classroom interaction patterns in the teaching of Home Science in girls, boys and mixed secondary schools?

The researcher also tried to achieve the following specific objectives, drawn from the above broad research questions:

(i) To observe and analyze the various types of verbal interaction patterns among Home Science Secondary School teachers and their students.

(ii) To find out which classroom climate is predominant as result of the teacher's verbal behavior patterns.
(iii) To find out which of the teacher's verbal behavior patterns elicit the most responses from the students.

(iv) To determine the differences in verbal interaction patterns as displayed by Home Science teachers and their students in girls', boys' and mixed classrooms.

Relevant literature was reviewed concerning the quality of teaching and verbal classroom teaching behavior patterns. The effect of classroom interaction on learning has also been discussed. A significant argument from the existing literature was that, teaching behavior patterns of the teachers affect the learning and the motivational level of students.

A total of six (6) Home Science teachers from six (6) stratified randomly selected schools within Nairobi province were involved in this study. Data was collected using a modified version of Flanders' Interaction Analysis Category (FIAC) system. Each teacher was observed four times.

The verbal interaction patterns of the teachers with their students were analyzed to provide data that would help to answer questions raised by the researcher. The researcher found out that:

(i) The teacher-pupil interaction patterns existing in boys' classrooms were autocratic (where the teacher dominates the classroom talk), while in girls' and mixed classrooms, they were democratic (where the students participate actively in classroom discussions).
(ii) The use of category 1 (accepting students' feelings), 2 (reinforcing), 3 (accepting students' ideas) and 4 (questions) elicited the most responses from the students.

(iii) Teachers treated boys differently from the girls in that they were more harsh with the boys.

The researcher recommended that:

(i) teachers should be in-serviced in order to sensitize them on the necessity develop a democratic classroom climate which would help to motivate and sustain learning in the students.

(ii) classroom interaction analysis be taught at the undergraduate level, rather than the postgraduate level.

(iii) the number of pupils per practical class needs to be reduced, by either allocating two teachers per class during practical lessons or dividing the classes into smaller groups.
CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND OF THE STUDY

Since the attainment of independence in 1963, Kenya has been faced with the problems of providing education that is relevant and meaningful to the learners. This is why Kenya’s education system has been undergoing changes to suit the learners’ needs and aspirations.

Contemporary educational literature acknowledges that the essence of teaching is communication. Education theorists recognize that speaking and listening are fundamental to classroom interaction and that teachers and students are linked in a system of reciprocal communication. This awareness has opened a way for studies of the interaction process in schools.

Primarily, interaction analysis is concerned with verbal behaviour because it is assumed that the verbal behaviour of the teacher is an adequate sample of his total behaviour. Interaction analysis is just a label that refers to any technique used for studying the chain of classroom events in such a fashion that each event is taken into consideration.

The advantage of taking more interest only in verbal behaviour is because of its relative ease to record. Also, as Galloway (1976) puts it:

*Verbal language assumes a tremendous burden for coherency of communication between human*
beings, and verbal language serves well for it is obvious to state that teachers rely overwhelmingly upon words to state and clarify ideas and meanings to students.

Although there might be several aspects which determine the teacher effectiveness in the classroom, one of the most important is probably, classroom-teacher-pupil interaction. Effectiveness of teaching and learning may be determined by the type and quality of classroom interaction between the teacher and the students.

The type and quality of classroom verbal interaction may determine not only the effectiveness of the learning situation, but also the attitude, interest and in part, even the personality of pupils.

In a classroom, the psychological atmosphere found inside it is of extreme importance in moulding the character of pupils and determining the efficiency with which learning takes place. This atmosphere is mainly determined by the teacher who can make a classroom a conducive place for pupils to learn through using pupils as a rich source of enthusiasm, (Muthwii, 1981).

Curtis (1966) suggested that methods of teaching must involve action on the part of the children. Children are usually curious to find out and this implies that their needs have to be catered for to facilitate a healthy physical and mental development. He stressed that pupil-centred learning is paramount to any kind of learning. Learning should be through all senses, such that the
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teachers should use teaching aids and encourage pupils to write their own records. He stressed that solid learning depends on pupils’ enjoyment of the work and appreciation of its utility and purpose. Therefore, it is necessary for each pupil to arrive at the truth for himself either through his senses or by reason and advocating methods that foster learning by experience. It is therefore, important for the teacher to ensure that there is enough time for students’ participation during the lesson.

Amidon and Hough (1967) explained that the quality and quantity of teacher-pupil interaction is a critical dimension of effective classroom teaching. Hyman (1970) indicates that whatever one has to teach, a particular way of teaching has to be chosen and that way has significant effect on the entire teaching and learning situation.

In their synthesis of studies on teaching, Dunkin and Biddle (1974) demonstrated that the most strategic way to answer questions relating to teaching effectiveness is through research on classroom processes. The Gachathi report of 1976 concluded that, no matter how education is viewed, the role and quality of teachers must be given the most critical consideration.

In the traditional classroom one stipulation was shared among teachers which guided and dictated the method of teaching. Wisdom and knowledge were supposed to flow from the teacher to the pupil. Whereas the teacher was the final authority with regard to the acquisition of knowledge, the pupils were
supposed to absorb the presented knowledge. The interaction of the teacher and pupil, which is an important aspect of the educative process, was and may still be one of the most neglected aspects.

Before the coming of the missionaries to Kenya, Home Science activities were taught to girls by their mothers at home. The mothers demonstrated the household tasks to girls who observed keenly. Later the girls participated in the activities and their mothers advised them on the best way to handle the tasks.

The 8-4-4 system of education in Kenya is gender sensitive at primary school level, where both boys and girls take the subject. However, even at this level, some parents complained that it was not right for boys to be taught how to cook and knit. Mackay (1981) had to support the introduction of Home Science in primary schools by arguing that it was not meant to turn boys into women but to help them be more self-reliant in taking care of themselves.

However, statistics obtained from the Statistics Department at the Provincial Director of Education’s (PDE) office in Nairobi showed that very few boys’ schools were offering Home Science as compared to the girls’ or mixed secondary schools. The statistics indicated that there were only 3 boys’ schools as compared to 13 girls’ schools and 13 mixed schools offering Home Science.
In evaluating the competencies associated with a successful teacher of Home Science, perhaps the most outstanding is that of teaching effectively. Effective teaching calls for an understanding of the learning process, essential for setting up a classroom environment where desirable learning can take place and for making instruction so stimulating that every student will want to learn.

Stimulating students to think critically, independently, and creatively may also be considered an essential factor in effective teaching. Students also need to learn to think independently so that they can acquire some measure of confidence in their ability to act for themselves. At the same time, it is important for them to be able to clarify their ideas, to develop an ability to understand the ideas of others, and to want to explore new lines of thought.

It is therefore, important for the teacher to involve the students as much as possible in the lesson, for example, through discussions, where the students will express themselves as they voice their opinions on a particular topic.

However, despite all this advice, research has shown that teachers in most classroom situations are controlling, restrictive, inhibiting and do most of the talking. Researches done in the past have shown that, most of the lesson-time is spent presenting new ideas by explanation, narration and description. Flanders (1970) found that 70% of the talking in the average primary and secondary classroom is done by the teacher. In a study carried out by Muthwii (1981) in Machakos, it was found out that most teachers spent their time
lecturing and asking very few questions. About 80% of the total time of the observation was spent on lecturing by the teacher.

The above findings [Mackay (1981), Muthwii (1981)], indicate that there are problems in our Kenyan classrooms which call for the attention of educators. Such problems can be partly solved by improving the teacher-pupil interaction patterns (in this case, the Home Science classroom), hence improving the teaching of the subject. While research has been done in other subjects, for example, Chemistry (Wa Sanga, 1982), Music (Njui, 1989), very little has been done in Home Science, especially in classroom interaction. Hence, the need for the present study.

### 1.1 CONCEPTUAL FRAMEWORK

The classroom teacher – student interaction patterns are summarised in Figure 1.1. The conceptual framework was derived from Flanders Interaction Analysis Category System (FIAC).

As it has already been mentioned, interaction analysis is a label that refers to any technique for studying the chain of classroom verbal behaviour between a teacher and his pupils in such a fashion that each event is taken into consideration.
Classroom interaction analysis helps a teacher to understand his/her teaching behaviour/style, so as to improve (if need be). It also helps us to see the relationship between interaction in the classroom and pupil's learning. One can also observe teacher's behaviour and how it initiates students' participation. If teacher's behaviour contributes to a democratic climate, then pupils are also going to respond and initiate and hence more learning will take place. If the classroom climate is autocratic, the students withdraw from the classroom situation and hence do not initiate or respond correctly. Hence, less learning takes place.

Fig. 1.1 below shows the indirect (preferred) and direct (unpreferred) teaching behaviours/styles which may be displayed by a teacher.

From the diagram, it can be observed that quality verbal interaction patterns have great influence on learning. This is because, they either encourage the students to participate in the learning activities or discourage them from any form of participation. For example, when a teacher (initiator of interaction) accepts, reinforces, praises and provides opportunity for the students to initiate talk, this gives rise to a democratic climate in class. The students hence
Fig 1.1

Preferred Teaching Behaviour/Style

Teacher (Initiator of interaction)

Indirect Teaching Behaviour/Style

e.g.
- Eliciting Students' Statements
- Listening to Students' ideas
- Acceptance of students' ideas/feelings
- Clarification of students' ideas/feelings
- Praise/reinforcement
- Encouragement
- Questioning etc.

Two-way interaction

Student

Democratic climate which leads to:
• good learning outcome/ good performance
• interest in subject which influences choice of subjects

Positive Attitude Towards:
• Subject
• Teacher
• School
• Learning

More Participation, e.g.
- Responding to teacher's questioning
- Initiating, etc.

Unpreferred Teaching Behaviour/Style

Teacher (initiator of interaction)

Direct Teaching Behaviour/Style

e.g.
- Lecturing
- Giving directions
- Reciting facts
- Criticising

One-way interaction

Student

Negative Attitude Towards
• Subject
• Teacher
• School
• Learning

Less Participation/Initiation

Autocratic climate which leads to:
• Poor learning outcome/ poor performance
• Loss of interest which influences choice of subject
become independent, free to participate and to discuss with the teacher. This in turn creates a positive attitude towards learning and motivates them. It may also create interest in the subject, which in turn influences the choice of subjects.

On the other hand, when a teacher lectures, criticizes and gives directions to students, this gives rise to autocratic climate which inhibits any active participation of students in the learning process. This in turn creates a negative attitude towards learning and hence produces poor learning outcome. This may also create loss of interest in the subject, which in turn may influence the students to drop the subject.

1.2 STATEMENT OF THE PROBLEM

There has been a tendency to follow established methods of classroom interaction and approaches to teaching which are largely expository. The tendency has been the same with Home Science teaching, as far as classroom interaction is concerned (Kiviu, 1985).

Home Science is not a compulsory subject for all schools. It is actually an elective, which may be selected in Form 1, and still be dropped at the end of Form 2. At this point, the choice of the subject may be influenced by the interaction patterns between the teacher and the students, which in turn help to create interest in the subject. As mentioned earlier, there are very few boys’
schools offering Home Science, while in mixed schools, very few boys (if any) express interest in the subject.

It is with this in mind that the researcher investigated the classroom interaction patterns in boys’, girls’ and mixed schools, to find out if there are significant differences in the interaction patterns in the different categories of schools. This helped the researcher to find out whether Home Science teachers treat boys any different from girls, hence, probably discouraging them from pursuing the subject further.

Researchers have come up with findings showing the effects of direct and indirect verbal interaction patterns. However, those findings dealt mostly with primary school subjects only. Very little has been done in Home Science in secondary schools. Infact, research related to interaction patterns of Home Science teachers has been limited. Hence, the need for the current study.

The purpose of this study therefore, was to observe and analyse various verbal classroom interaction patterns of Home Science secondary school teachers with their students in boys, girls and mixed schools in Nairobi province.

1.3 RESEARCH QUESTIONS

This study was guided by the following broad research questions:

1. What type of teacher-pupil interaction patterns exist in the Home Science classrooms?
2. Are there significant differences in classroom interaction patterns in the teaching of Home Science in girls', boys' and mixed secondary schools?

1.4 OBJECTIVES OF THE STUDY

The purpose of this study was to determine the variation of verbal classroom interaction patterns among Home Science teachers and their students in girls', boys' and mixed secondary schools in Nairobi province. This study, therefore, tried to achieve the following specific objectives drawn from the broad research questions outlined above:

1. To observe and analyse the various types of verbal interaction patterns among Home Science secondary school teachers and their students.
2. To find out which classroom climate (autocratic or democratic) is predominant as a result of the teacher's verbal behaviour patterns.
3. To find out which of the teacher's verbal behaviour patterns elicit the most responses from the students.
4. To determine the differences in verbal interaction patterns as displayed by Home Science teachers and their students in girls’, boys’ and mixed classrooms.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

1. Due to the limited amount of time and money, the Home Science teachers who were sampled were all from Nairobi, which is an urban area. It would therefore, be invalid to generalise the results to rural teachers due to the socio-economic background of these two regions.
2. The researcher was only interested in classroom interaction in the teaching of Home Science. Therefore, she did not pay much attention to the Home Science content and syllabus, which are also important in the teaching-learning process.

3. The researcher was also dealing with one class level only (Form II). Therefore, it would also be invalid to generalise the results to other class levels. However, the results can be generalized with caution.

4. Whereas the teaching-learning process includes both verbal and non-verbal interaction, the researcher was only interested in the verbal interaction patterns of Home Science teachers and their students in secondary schools.

1.6 BASIC ASSUMPTIONS OF THE STUDY

The researcher based the study on the following assumptions:

1. That the presence of the observer in the classroom would not greatly affect the normal interaction of the teacher and the students.

2. Verbal language (behaviour) represents the greatest proportion of all the classroom interaction patterns (Withall et. Al, 1961).

3. That the verbal classroom behaviour patterns during the study period were the ones used normally by the teacher.

1.7 SIGNIFICANCE OF THE STUDY

Interaction of teacher and pupil is probably one of the most important aspects of the education process. Behind this lies the desire to understand the nature of teacher-pupil interaction in order that we may identify the way of improving
pupil's motivation in class activities and teaching strategies. In doing this, we may improve the quality of academic performance and effectiveness of the learning situation in our classroom.

Flanders (1965) showed that the elementary school teachers who scored high in motivation of students, used fair punishment, more encouragement, praise and unbiased interaction with their students. While their counterparts who scored low on the same aspects, comparatively used more criticisms, commands, lectures and less use of encouragements and praise for their students.

Researches done in the past have indicated that there are problems existing in our Kenyan classrooms. (Muthwii, 1981), (Mackay, 1981), (Wa Sanga, 1982), (Njui, 1989)]. These problems call for more research in education and especially in classroom interaction, which may determine the effectiveness of teaching and learning. As mentioned earlier, these researches have been in different subjects, for example, Music, Chemistry, Physics, English and Kiswahili. However, very little has been done in classroom interaction in the teaching of Home Science in boys', girls' and mixed schools. This research therefore, hoped to find out if the type of school (that is, girls', boys' and mixed) contributes to the teaching patterns in the classrooms. In so doing, it would be possible to advise the teachers and also to gather documented evidence on the state of Home Science teaching, in the boys', girls' and mixed schools.
It is hoped that this will help the practicing Home Science secondary school teachers as well as Home Science teacher trainees, to understand some of their teaching habits, and how they relate to their students. It will also help the teachers to review their way of teaching, so as to improve the classroom interaction between them and the students, hence improve the teaching-learning process.

The study will be helpful to the curriculum developers of Home Science at Kenya Institute of Education (K.I.E), who develop the Home Science syllabus. It hopes to draw to their attention topics in Home Science that will contribute to classroom interaction, hence enhance the teaching-learning process.

It will also be helpful to Home Science college tutors/lecturers because it will reflect how teachers and pupils interact with each other in the classroom. The college tutors/lecturers will know what exactly happens in the field, especially during teaching practice, and this may lead to their revising their teaching methods. They will also know how to conduct in-service courses for teachers from the field in as far as classroom interaction is concerned.

It will also be helpful to Home Science secondary school inspectors, as they are the people who will recommend the in-servicing of Home Science teachers from the field. The school inspectors are also the people to advise the Home Science teachers in the field on how to improve the classroom interaction in the teaching of Home Science.
This study will also contribute in stimulating other researchers to do some work in this interesting and important area.

The findings from this study will facilitate decisions that need to be made in relation to classroom interaction patterns that are effective in the teaching of Home Science in secondary schools in future.
1.8 DEFINITION OF TERMS

- **A pattern:** It is a short chain of events that can be identified, occurs frequently enough to be of interest, and can be given a label.

- ** Autocratic Teacher Behaviour:** It is teacher’s verbal behaviour whereby the pupil’s feelings are not considered and the teacher dominates in the talk or discussion. A student simply listens and obeys orders from the teacher.

- **Classroom Interaction:** The chain of events which occur one after the other, each occupying only a small segment of time.

- **Democratic Teacher Behaviour:** It refers to classroom teacher’s verbal behaviour whereby the pupils are allowed to share or contribute a lot and feel free in the discussion.

- **Drill Teaching:** It is a pattern of teaching which checks facts about content by asking a student narrow questions followed immediately by short student answers. The teachers’ narrow questions limit students’ response, thus ensuring teacher domination and emphasis of exposition techniques.

- **Home Science:** It is a family centred area of study consisting of Food and Nutrition, Health Education and Home-management. Home-management covers the family, child care, family shelter and its care and laundry work.

- **Interaction analysis:** It is a label that refers to any technique for studying the chain of classroom verbal behaviour between a teacher and his pupils in such a fashion that each event is taken into consideration.
• **I \( \div D \) Ratio:**

This refers to the ratio of all categories (tally totals) falling under indirect verbal influence of a teacher divided by the categories falling under direct verbal influence of a teacher.

\[
I = \frac{\text{Indirect verbal influence}}{\text{Direct verbal influence}}
\]

• **Observation System:** This term refers to any technique designed for the purposes of identifying, examining, classifying and/or quantifying specific interacting variables of a given instructional-learning situation.

• **Private Schools:** These are secondary schools which are developed, equipped and provided with staff from private funds from individuals, religious organizations, etc. These schools may be profit-making or non-profit making.

• **Public Schools:** Secondary schools which are developed, equipped and provided with staff from public funds by the government, parents and communities.

• **Teaching Behaviour Patterns:** These are divided into two;

  i) **Indirect/integrative behaviour pattern:** This is a pattern of teacher behaviour which:

  - Accepts, clarifies and supports the ideas, feelings of students.
  - Praises and encourages students.
- Asks questions to stimulate students' participation in decision making.
- Asks questions to orient students to school work.

ii) **Direct/diminutive behaviour pattern**: This is a pattern of teacher behaviour which:
- Expresses or lectures about one's own ideas or knowledge.
- Gives directions or orders students.
- Criticizes or depreciates student behaviour with intent to change it.
- Justifies his own position or authority.

- **Verbal Interaction Patterns**: These are short chains of verbal interaction events that can be identified and occur frequently enough to be of interest. These include such verbal behaviours like praising, criticizing, questioning, answering and lecturing.

- **8.4.4: system of Education** which consists of 8 years of Primary Education, 4 years of Secondary Education and 4 years of University Education.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Related relevant literature was reviewed concerning the quality of teaching and verbal classroom teaching behaviour patterns. The effect of classroom interaction on learning has also been discussed. A significant argument from the existing literature was that, teaching behaviour patterns of the teachers affect the learning and the motivational level of students.

The reviewed related literature was in the following areas:

i) Approaches used in classroom observation.
ii) Studies on classroom interaction in general
iii) Studies on classroom interaction in Kenya
v) Effects of Interaction on Learning
vi) The Nature of Teacher-Pupil Classroom Interaction.

2.1 APPROACHES USED IN CLASSROOM OBSERVATION

The main approaches that have been used for classroom observations are the structured and the unstructured approaches. Some researchers have also used rating scales and checklists.
2.1.1 *The Structured or the Systematic Approach*

This involves using a preconceived structured schedule which is used for coding classroom behaviour to provide data which is quantified (Muthwii, 1987) and then used for discussions.

Power (1977) quoted in Muthwii (1987) noted over 200 structured or systematic observation systems which had been produced for this purpose. The reason which he gave to explain why so many schedules had been produced was because of the complexity of classroom behaviour.

According to Ober, et. Al, (1971), to acquire an understanding of what an observer is about to witness and to learn the necessary techniques require that at least the basic conditions be met: (a) The observer needs to know precisely for what he/she is looking. He/she must have clearly in mind his/her own personal conceptualization of what constitutes the instructional – learning situation. He/she must be able to recognize and identify the “principal characters” in the situation and, in turn, be able to recognize the role of each. (b) In order to develop a plan of action for observing the classroom setting, the observer needs to be able to see variables both as separate, discrete phenomenon and as they interact with each other within the dynamics of the classroom operation.
Both the conceptualization of what the classroom setting is and the development of a plan of action can be greatly assisted by systematic observation.

Systematic observation represents a useful means of identifying, studying, classifying, and measuring specific variables as they interact within the instructional – learning situation. Operationally, systematic observation adds meaning and precision to observational experiences. By using the observational techniques that are provided by systematic observation, the observer is able to conceptualize the interaction of the variables that make up the instructional – learning situation. Finally, he/she is able to study these interacting variables in a line, on-going situation, (Ober, et.Al, 1971).

Systematic observation is an accepted method of organizing observed teaching acts in a manner which allows any trained person who follows stated procedures to observe, record, and analyse interactions with the assurance that others viewing the same situation would agree, to a great extent, with his recorded sequence of behaviours. Furthermore, the observer would know that he or others would record the same behaviours in the same way though viewing a wide variety of classroom or interaction settings. The basic purpose of systematic observation is to help operationalize teaching objectives in teaching strategies, (Ober, et.Al, 1971).
Direct observation can and should be used in the search for effective patterns of teaching-learning behaviour. Basic elements in the classroom generally include the teacher, the students, the content, the plan, and the interactions. Observation allows individual teachers to study and analyse their own teaching strategies in the privacy of the classroom and home. Systematic observation provides the opportunity for continuous monitoring of teaching behaviour – the examination of class-relevant variables, in the light of activities necessary to teach as planned.

2.1.2 The Unstructured approach

Here, the structure has no previously designed schedule which is used for coding behaviour. It is quite informal in nature. Since the observer has no predetermined method of coding some specified events, he selects at random what he thinks useful and available for description and discussion. His beliefs, attitudes and his interpretive framework plays an important role in determining what is selected, (Power, 1977) quoted in Muthwii (1987).
2.1.3 Rating Scales and Checklists

These are alternative approaches which have been used by researchers such as Kleinman (1965). However, their validity has been questioned, (Power, 1977) quoted in Muthwii (1987).

2.1.4 The criticism of the Structured approach

Robinson (1975) thought that the true reality of classroom life as perceived by teachers and pupils is distorted when the structured approach is used for studying classroom interaction because the categories contribute only a small portion of the total classroom events. This happens especially when events are coded only once per given period of time or time sampling unit. The actual language used in the intellectual transactions between teachers and pupils are not recorded and there is a loss of sequence in classroom events when recorded. This is termed as “reductionism” (Ajeyalemi, 1981) quoted in Muthwii (1987)

2.1.5 The criticisms of the Unstructured approach

The advocates of this method believe that an experienced and sensitive observer can capture what is important of the essential qualities of the classroom events; he/she randomly chooses what he/she judges to be important. The approach is criticised by Power (1977) quoted in Muthwii (1987) because the results of such an observation are liable to distortion, reduction or bias. He also disagreed with the informal approach because of its random nature of data selection. This cannot be useful due to the complexity
and the rapidity of classroom events. In fact, it also suffers from the weaknesses of the structured method of losing the sequence and the complete record of discourse events.

2.2 STUDIES ON CLASSROOM INTERACTION IN GENERAL

Hillman and Gregory (1978) did a study on black and white pupils. It was discovered that their difference lay in the way teachers interacted with their students. This study went further to report that there was an uneven interaction between pupils and teachers; it was more with some pupils, while less with others.

Straub (1980) has also reported a study where interaction analysis was used to attempt to discriminate between different patterns of teaching. The teachers in this study were divided into indirect and direct teachers. Direct teachers were those who discouraged student initiation and freedom, and were more involved in lecturing and direction giving. Indirect teachers were those who allowed openness of ideas and suggestions and encouraged students’ freedom of action.

Other studies on classroom observation carried out in Malawi, Rwanda and Tanzania, showed that teachers paid more attention to boys than girls. These include Spender (1992), Sinyangwe and Chilangwa (1995). Perhaps the important question to ask at this point is, “Is this also the case in the teaching of Home Science, which is assumed to be a subject for women?”
The above studies indicate that interaction may be used to differentiate between types of teachers; those that allow for quality interaction and those that do not. Whether this may be evident also in the teaching of Home Science, was the significance of the current study.

2.3 STUDIES ON CLASSROOM INTERACTION IN KENYA

Moderate research has been done on classroom verbal interaction in Kenya. Sifuna (1973) has done a study on primary schools. In his study, "The impact of New Primary Approach on the Quality of Teaching in Primary Schools in Kenya", he pointed out that although much has been said about the quality of those who go into teaching, there has been no attempt to predict performance in teaching. He recommended that interaction analysis be used as a means of helping teachers to become better teachers in teaching and yield good results.

Wa Sanga (1982) studied chemistry in secondary schools. He observed that poor teaching and inappropriate teacher behaviour are not deliberately or consciously done by the teachers concerned. Therefore, if the teachers were made aware of this discrepancy, they would try to adjust accordingly.

Njui (1989) studied music in secondary schools. She carried out research on immediate feedback on the teaching behaviour patterns of secondary school music teachers. She observed that music teachers used more of drill teaching behaviour patterns irrespective of feedback given to them to try and change their behaviour patterns. Nonetheless, when the teacher took control of the
class, she realised that the students’ freedom was limited and they were denied opportunities to be creative. The teachers dominated the classroom talk and most of the time they controlled the classroom interchange by using category 6, which is giving directions to the students on what to do or say. This behaviour inhibited students’ participation in classroom activities.

Njogu (1993) in his research on quality of classroom interaction and its effect on performance, observed that the greater the verbal classroom interaction between a teacher and a student, the better the student’s performance.

Omar (1996) also carried out a study in secondary schools, in Physics, Chemistry, English and Kiswahili. In her research, “Variation of Teaching Behaviour Patterns of Teachers with Different Class Levels and Subjects” she observed that, teachers teaching different class levels did not exhibit different teaching behaviour patterns. However, those teaching different school subjects exhibited different teaching behaviour patterns. She recommended that teachers need to be in-serviced, with the aim of sensitizing them on the necessity to develop a democratic classroom climate which would help to motivate and sustain learning in the students.

All these researches were done in the past. Some were done more than 20 years ago, yet time is changing and so are the communities and the classroom context. Verbal interaction patterns are likewise likely to have changed, hence the need for the present study.
It has been observed by Kenyan researchers that teachers interact differently with their pupils. As a result of this, some pupils are encouraged to participate in the learning activities while others are discouraged from any form of classroom participation in the learning process.

The above findings indicate that there are problems in our Kenyan classrooms which call for the attention of educators, to investigate the root causes of these problems, and to come up with solutions. This calls for more research in classroom interaction.

It is with this in mind that the researcher focused her attention to the verbal classroom interaction patterns of Home Science secondary school teachers in boys’, girls’ and mixed secondary schools, with a view of improving the classroom interaction in the teaching of Home Science in secondary schools in future. This will be done using recommendations from this study.

2.4 THE SUCCESSFUL TEACHER OF HOME SCIENCE

In this world of sweeping social and technological changes profoundly affecting human affairs and personal relationships, becoming a successful teacher is more important than ever. Home Science has moved far beyond the earlier emphasis on cooking, sewing, and certain other skills of home making designed to help a selected number of adolescent girls. Today the curriculum includes all aspects of family living. Therefore, the successful teacher of
Home Science will need to recognize and understand the implications which social and technological changes have for family living. Meeting this challenge calls for certain general competencies which are considered fundamental to high quality teaching.

Hatcher and Andrews (1963) say that, there is agreement in general that a teacher should know: (i) What to teach (ii) how to teach, and (iii) how to plan and organize a curriculum that will meet the needs of the people in the community where he/she is teaching.

Bessom (1980) says that, the teacher cannot assume that his/her acceptance of the role and duties related to teaching will evoke automatic and reciprocal acceptance by the students of his/her role as a teacher. On the contrary, as he/she approaches the teaching situation, the teacher will discover that it is necessary to motivate students so that they will want to learn and develop their potential.

As the teacher interacts with students, he/she is expected to furnish them with a sense of belonging. To do this, he/she must establish a classroom climate that is warm and democratic. Democratic practices should play a significant part in the classroom because they can be used to give more chances to students to be free and creative. This is because, students take more interest in the activity when they have had some hand in the operation of that activity than they do when they are simply led around, (Omar, 1996).
However, a Home Science teacher who is well organized but dominates the class and does not provide opportunities for student involvement may find that discipline can be a problem. In such a situation control may only be possible through autocratic methods.

Omar (1996), continues to say that classroom control is one of the major concerns of the teacher. No matter how well the material is organized for class presentation, if the teacher does not have the skill to control students in class, it will be impossible to create an atmosphere conducive to learning. Developing such a skill is a very personal and individual task.

A technique that proves effective for one Home Science teacher in a particular disciplinary situation may not necessarily work for another Home Science teacher in a similar situation, not even for the same teacher in a different situation. However, the Home Science teacher must realise that good teaching might be the best way to prevent student misbehaviour because it may draw students’ attention to the benefit of learning and thus discourage them from engaging in divergent activities.

Omar (1996) also argued that the teachers’ statements during classroom interchange are very influential in terms of learning as he/she either encourages the students to participate in the learning activities or discourages them from any form of participation. In order to allow full development of individual
talents and personality, the secondary school curriculum should encourage teachers to conduct their teaching in a manner that students feel free to express their feelings and ideas as they participate in the learning process. Many gaps exist in our Kenyan classrooms, namely between: (a) presenting and representing ideas, (b) transmission and facilitation, (c) quality of teacher initiated and pupil initiated verbal interaction.

Therefore, there’s need for systematic planning and implementation of classroom verbal interaction.

2.5 EFFECTS OF INTERACTION ON LEARNING

The ultimate aim of teaching is learning. It is generally agreed that learning is a direct result of good teaching, and effective teaching must produce observable changes in pupil behaviour. Hough (1970) has defined teaching behaviour patterns as acts influencing behaviour. He has also said that learning involves behaving. It follows, therefore, that behaviour which is characteristic of good teaching can be demonstrated by good and effective teachers. However, the best way of identifying good teachers is through observation. Systematic observation presents the means of accountability both for the actions of the teacher and the continuous interactions within the classroom.

When a teacher initiates, directs and actively supervises the learning activities, he/she assumes a dominant role while the students are passive. On the other hand, a teacher may choose to extend opportunities to students for more self-
direction and self-expression. For these patterns to be authentic, the invitation by the teacher is extended in a way that it can be accepted and acted upon.

Several studies have demonstrated that the teacher's instructional behaviour influences students' behaviour in one way or another. Flanders (1965) showed that students actually achieve more in indirect classroom climate. Flanders' study was conducted in Mathematics and Social studies. In the same area of research, Flanders found out that students of teachers who used a teaching style that is both indirect and flexible had more positive attitude towards school and their teacher and achieved more than students of teachers who used a more direct teaching style.

According to Flanders' (1970) study of teaching effectiveness, it is the use of indirect verbal behaviour, such as acceptance, clarification of students' feelings and praise which is associated with a more positive attitude towards higher achievement by the pupils. It was felt that the teacher has a lot to influence, and must employ a teaching pattern that can encourage the learner to participate in the learning activities freely.

Musella (1970) venturing into this area found that an effective teacher among other characteristics was described, by students as being democratic, responsive, understanding, kind and stimulating (indirect verbal behaviour). On the other hand an ineffective teacher was described as partial, autocratic, aloof, dull and evading (direct verbal behaviour).
The degree of interaction between the Home Science teacher and his/her pupils are proportional to learning since these interactions are the forms which display change of behaviour. It is a general belief among educators that combining different classroom interaction patterns in the teaching of a particular lesson is fundamental for effective teaching. Rowe (1973) has reported that different teaching techniques produce some specific pupil outcome. For example, warm supportive rewarding behaviour appears to help concept learning and also to reduce risk-taking.

The Gachathi report of 1976, stressed the child’s participation in classroom activities. The teacher must offer opportunities to a child in class in order to achieve good results.

Vinelli et. Al, (1979), demonstrated that students who are not restricted by the teacher’s directive behaviour consistently exhibit lower frequencies of teacher dependency behaviour than students in more teacher-structured classes. Such behaviour resulted in more time exploring and less time watching the teacher.

Haukoos and Penick (1983), did a research on the influence of classroom climate on science process and content achievement and found out that direct verbal behaviour of the teacher (lecturing, giving direction, reciting facts and criticizing) tends to minimize the variety of student responses, while indirect verbal behaviour (eliciting students statements, listening and accepting student
ideas) increases freedom of the students and encourages them to exhibit a variety of responses.

Njogu (1993), in his research on the quality of classroom interaction and its effect on performance, observed that the greater the verbal classroom interaction, the better the performance.

In summary, the above findings indicate that indirect verbal behaviour patterns in teaching are superior to direct verbal behaviour patterns. This is because indirect verbal teacher behaviour patterns in a classroom motivate pupils towards learning as compared to direct verbal teacher behaviour which has negative results to learning.

2.6 THE NATURE OF THE TEACHER-PUPIL CLASSROOM INTERACTION

Classroom behaviour by its nature, exists in a context of social interaction in the classroom. The act of interaction leads to reciprocal contacts between the teacher and the students and this inter-change may be called teaching.

The Home Science teacher’s interaction with students may be thought of as ways of helping them to achieve class goals and the learning associated with these goals. The teacher tries to establish a pattern of relations with his/her students designed to meet this general end. Such a pattern may take different forms and involve different procedures, all of which depend upon the teacher’s
personality, his/her understanding of adolescents, and his/her knowledge and use of effective learning procedures. It is, therefore, important for the teacher to evaluate these factors in order to see how they contribute to the establishment of good interpersonal relationships within the classroom.

A teacher’s innate response to the individual student may be varied. It is natural for him/her to respond sympathetically to certain students and to be irritated and annoyed by others.

Fleck (1968), says that each pupil must experience learning personally and learning takes place to the degree that an individual can discover a personal meaning in a situation or an idea. The teacher then must be certain that activities and ideas are being perceived by the learner in a meaningful manner. The student does this in many ways, through his/her senses, through the use of language, symbols to communicate by interpreting his environment through his/her perception and identifying interaction.

Mcfarland (1971) expresses his view this way:

_Students will tend to like teachers who try to talk to them and understand their problems in the classroom. When the students are motivated and reinforced equally (evenly) most of them will feel free and learning will be enhanced, unlike classes where the teachers are harsh._

Evans (1980:38), in his study showed that:

_Teachers interacted more times and more favourably with their most creative nominees. These were_
praised and encouraged frequently while least creative nominees received few and usually discouraging interactions.

Civikily (1982), observed that the teacher’s beliefs about self and about the students become evident in his/her classroom communication and behaviour. Hence, she observes the need for teachers to pose the following self-searching questions: (a) Do I take every opportunity to establish a high degree of communication with my students? (b) Do I convey my expectations and confidence that students can accomplish work, can learn and are competent?

The point behind these self-searching questions is no doubt to make consistent as well as credible remarks of students’ efforts that would be helpful. In order to be consistent and credible, the Home Science teacher needs to be accurate in his/her scrutiny and appraisal of his/her pupils’ work without exaggerating opinions of his/her pupils nor flattering where due. Tactfully presented constructive criticisms would benefit a pupil. The ultimate goal is definitely to make a pupil see and believe that he/she was responsible for the personal achievement which his/her teacher is according him/her.

It is evident from the above that classroom verbal communication is a rather delicate matter which if, it is to be fostered in a school setting, both parties must have a lot of regard and good will towards one another. The onus is really with the teacher. His/her professional training in child psychology once put to proper and innovative use, would go a long way towards cultivating an appropriate atmosphere for verbal classroom interaction.
It is important to consider some aspects which make a teacher interact differently with different students. Spaulding (1963) quoted in Wa Sanga (1982), found that gender affected teacher-student interactions. He found that teachers were more harsh with boys than with girls.

Students' achievement has been shown to affect the way teachers interact with their students. Goods (1970) in his study, discovered that, first grade students whom teachers perceived as high achievers received more responsive opportunities and more positive feedback, than classmates perceived as low achievers.

Similar results were also obtained by Kranz et.Al, (1972), who discovered that:

*Teachers consistently had more substantive interactions with the top third of their class and the interactions were more favourable for the high achievers.*

In his book, Brophy (1974), indicated that several student attributes do influence teacher-student interaction patterns. One of these attributes is the socio-economic status (SES) of the students. High status children get most of their teachers' praises and rewards while lower class children get mainly criticisms and punishments.

All the studies reviewed above indicate that the nature of classroom interaction is affected by the students' sex, achievement and social status. All these may induce feelings of failure and frustrations to students who receive discouraging
interaction from their teachers. Many capable students in such cases may therefore, not get the chance to reveal or fulfil their talents or fulfil their potential, simply because they receive several years of less adequate education than their classmates, who are high achievers. Logically, it would be argued that students, for example who are deemed by their teachers to be low achievers need more attention so as to improve.
CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter focuses on the methodology used in the current research. It established the strategies followed in the choice of the instrument, how it was used for preparation for the main study, sample selection and data collection.

3.1 RESEARCH DESIGN

The present study was a survey, whereby the researcher observed what was actually happening in the classrooms in the teaching of Home Science, and thereafter reported the findings. Therefore, this study adopted a qualitative descriptive approach. According to Best and Kahn (1993), a qualitative descriptive study utilizes qualitative methods to present what is there. That is, it obtains information concerning the current status of a phenomenon and describes "what exists" with respect to variables or conditions in a situation.

3.2 LOCATION OF THE STUDY

As it has been noted, this study involved observations of every teacher in the study. There were several observations made before the actual data collection and also during the actual data collection.

Due to this fact, the nature of the study was both expensive and time consuming. Because of limited time and money however, the researcher
decided that only one Kenyan Province would be used for this study. This would be Nairobi Province. So all the Home Science teachers were from the public schools in Nairobi Province. One of the reasons why Nairobi was chosen is because of the proximity of the schools to each other, and also because they are accessible. This was an important aspect to consider in this study, especially if the researcher had to observe 2 to 3 teachers on the same day. The researcher was also familiar with the locality which made it easier for her to develop immediate rapport with the subjects, hence making data collection less cumbersome.

Singleton (1993) sums up this by stating that, the ideal setting is one that is directly related to researcher’s interest, easily accessible and that which allows the development of immediate rapport. Best and Kahn (1993) also argue that, since research requires careful thought about a number of practical factors, therefore, accessibility and cost factors become legitimate considerations. Another reason for choosing Nairobi as the area of study was because it is cosmopolitan. This being the case, one is able to get a variety of schools that do Home Science as compared to other areas, that is, one can be able to get girls’ schools as well as boys’ schools and mixed schools. This was hard to achieve in other parts of the country, where Home Science was mostly done in girls’ schools and mixed schools. Therefore, the researcher may not have been able to get a representative sample. Below is a table showing the number of schools doing Home Science in a few districts in Kenya.
Table 3.1  Number of Schools doing Home Science in some districts in Kenya

<table>
<thead>
<tr>
<th>District</th>
<th>Boys</th>
<th>Girls</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>3</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Kiambu</td>
<td>2</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Mombasa Municipality</td>
<td>0</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Eldoret Municipality</td>
<td>0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Machakos</td>
<td>0</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Murang’a</td>
<td>0</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Thika</td>
<td>1</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Nyeri</td>
<td>0</td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>

[Obtained from Kenya National Examination Council (KNEC)]

3.3 POPULATION OF THE STUDY

The population of this study consisted of Home Science secondary school teachers in Nairobi, teaching Form II students in public secondary schools that offer Home Science. There were twenty-nine (29) public schools offering Home Science in Nairobi Province and they were divided into girls’, boys’ and mixed schools.

The public schools were chosen due to their similarities with respect to facilities such as textbooks, Home Science laboratories, Home Science equipment, library, and many others. These facilities may not be the same in private schools. Some private schools may either be more or less equipped than the public schools. Some private schools also use a different curriculum.
from that of the public schools. For example, public schools use the 8-4-4 system of education, while some private schools may have the London G.C.E (General Certificate of Education) system of education.

3.4 SAMPLE POPULATION

For the purpose of this study, the researcher observed 6 teachers from 6 different secondary schools, teaching Home Science in Form II.

3.4.1 Sampling Technique

Disproportional Stratified random sampling technique was used to get the 6 secondary schools that do Home Science in Nairobi Province. This was probably the most appropriate sampling technique for this study, since the researcher observed classroom interaction in boys’, girls’ and mixed secondary schools. This sampling technique ensures representativeness and avoids bias.

In disproportional stratification, an equal number of cases are drawn from each subgroup regardless of the proportions in the population, (Hall, 1967). In this case, for example, boys’, girls’ and mixed schools were represented equally in this study. (See table 3.2).

The advantages of disproportional sampling lie primarily in the economy of gathering data from a small group and in the ease of comparing data when the subgroups are of equal size, (Hall, 1967).
As mentioned earlier in chapter 1, Home Science as a subject deals with the home and the family, and is therefore, considered a woman’s domain. It is with this in mind that the researcher wanted to find out if there’s a difference in classroom interaction in the different categories of schools. There were only three (3) boys’ schools doing Home Science as compared to thirteen (13) girls’ schools and thirteen (13) mixed schools in Nairobi Province. The researcher decided to use two schools from each category, that is, two (2) boys’, two (2) girls’ and two (2) mixed schools, so as to have an equal number of schools in all the three (3) categories. The above information has been illustrated below:

Table 3.2: Sampling Grid

<table>
<thead>
<tr>
<th>School</th>
<th>No. of Schools</th>
<th>Sample Population Of Schools</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>13</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Boys</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mixed</td>
<td>13</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

This is about 20% of the total population which is acceptable in descriptive research. (Ary et Al, 1972)

3.4.2 Justification for the Sample

The sample size was limited by the research design in that, classroom interaction is more qualitative than quantitative in nature. This is because the researcher had to observe one teacher several times so as to get reliable results of what really happens in the classroom, that is, get a true picture of what really
goes on in the classroom. A few observations may not have achieved this. This therefore, was time consuming and expensive (as mentioned earlier). In addition, due to the time sampling unit (three seconds), the amount of data is enormous. For example, in a forty minutes lesson (which starts and ends on time, with no interruptions), the researcher will have about eight hundred tallies. Therefore, with many teachers, it may be difficult to handle the amount of data.

The timetables of those teachers were also clashing, for example, two or more teachers may have had a lesson at the same time. In that case, the researcher was not able to observe all these teachers (due to the clashing of the timetables), and was only able to observe six whose timetables did not clash.

3.4.3 Sampling Procedures
Initially, 9 teachers were observed, so as to take care of the percentage wastage that may have occurred in the course of the study (during data collection). For example, there may be unexpected closures of the schools or a teacher may fall ill. Therefore, it is important to choose more schools than the number needed for the sample (in this case 6 teachers). The 6 teachers were selected purposively from the 9 teachers.

3.4.4 Justification for the Class level
The researcher randomly sampled one Home Science teacher (if there was more than one) from each school, who was observed teaching Home Science in
Form II. Form I (secondary year 1) class, having just left primary school was considered not well placed, since the teachers had not stayed with them long enough. They had also not adjusted well enough and might therefore, not be able to interact so well with their teachers.

Form 4, being an examination class was also not found to be suitable for the study because most schools would not allow their examination class to be interfered with, as they prepare for their examinations.

When students are admitted to Form 1, they are required to choose two (2) subjects out of ten (10) electives, of which Home Science is one. At the end of Form 2 or beginning of Form 3, they have to drop one of these two. It is with this in mind that the researcher decided that Form 2 would be the most suitable class, so as to get a representative sample of both boys and girls.

3.5 THE INSTRUMENT

After sampling and selecting the subjects of the study, what remained was the actual collection of data. To do this, a tool to collect data on the verbal interaction patterns of Home Science teachers was needed. The researcher had to therefore, look for an appropriate category system to use in collecting the classroom interaction data.

Amidon and Hough (1967) mentioned twenty different systems being used in the United States by 1965. Today there are well over a hundred systems, many
of which are however adaptations and modifications of the Flanders' (1965) system. The Flanders system has been found to be easy to train in its use (Wa Sanga, 1982), and it is also applicable in the present study. However, the researcher modified one of the categories.

3.5.1 Justification for Modification of Flanders' Category System

The researcher thought it suitable to modify this system so as to suit her purpose. As a result she modified Category 5. The researcher found it necessary to modify the instrument so as to make it useful in practical subjects, such as Home Science, where demonstrations and practicals are central to the teaching of the subject. (See Appendix I). For example, category 5 (lecturing) will now have three parts; (a) lecture involving only talk by the teacher, without any aids to enhance the points, (b) lecture with illustrations or aids. The lecture here combines use of charts, flash cards, real objects and chalkboard, (c) lectures with demonstrations where the teacher performs an experiment or a practical to enhance a part of the lesson.

The Flanders category system is described below. A description of how it will be used will also be given in the data collection section in this chapter.

3.6 DEVELOPMENT OF THE FLANDERS' INTERACTION ANALYSIS CATEGORY (FIAC) SYSTEM

This system was developed by Flanders (1965). He developed it to categorize both talk by the teacher and the pupil. Flanders had three objectives when he
developed this category. These are: (a) to help individual teachers develop and control their teaching behaviour, (b) to study teaching behaviour by keeping track of selected events that occur during classroom interaction, (c) to focus on teaching behaviour and its relationship to classroom interaction and educational outcomes.

Having these objectives in mind, Flanders spent many hours of live classroom observation. He came up with a ten-category system for categorizing teacher talk and pupil talk. This category system is shown in table 3.3.

**TABLE 3.3**  
**Flanders’ Interaction Analysis Categories System**

<table>
<thead>
<tr>
<th>Responses</th>
<th>1. <strong>Accepts feeling.</strong> Accepts and clarifies an attitude or the feeling tone of a pupil in a non-threatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. <strong>Praises or encourages.</strong> Praises or encourages pupils action or behaviour. Jokes that release tension, but not at the expense of another individual; nodding head, or saying “um huh?” or “go on” are included.</td>
</tr>
</tbody>
</table>
3. Accepts or uses ideas of pupils.
   Clarifying, building, or developing ideas suggested by a pupil. Teacher extensions of pupil ideas are included but as the teacher brings more of own ideas into play, shift to category five.

Teacher Talk

4. Asks questions. Asking a question about content or procedure, based on teacher ideas, with the intent that a pupil will answer.

5. Lecturing. Giving facts or opinions about content or procedure; expressing his own ideas, giving his own explanation, or citing an authority other than a pupil.

Initiation

6. Giving directions. Directions, commands, or orders to which a pupil is expected to comply.

7. Criticizing or justifying authority. Statements intended to change pupil behaviour from non-acceptable to acceptable pattern; bawling someone out;
stating why the teacher is doing what he is doing; extreme self-reference.

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupil Talk-response</td>
<td>Talk by pupils in response to teacher. Teacher initiates the contact or solicits pupil statement or structures the situation. Freedom to express own ideas is limited.</td>
</tr>
<tr>
<td>Pupil Talk-initiation</td>
<td>Talk by pupils which they initiate, expressing own ideas; initiating a new topic; freedom to develop opinions and a line of thought, like asking thoughtful questions; going beyond the existing structure.</td>
</tr>
<tr>
<td>Silence or confusion</td>
<td>Pauses, short periods of silence and period of confusion in which Communication cannot be understood by the observer.</td>
</tr>
</tbody>
</table>

This table lists 10 categories, 3 of which are for teacher talk in response to students, code 1,2,3, and category 4 for teacher questions. Categories 5,6 and
7, are for teacher initiation. Pupils’ response is code 8 and initiation of pupil’s ideas is code 9. Finally, category 10 is coding silence or confusion.

So far as communication is concerned, these three conditions: (a) Teacher talk, (b) Pupil talk, and (c) Silence or confusion, are said to exhaust all the possibilities (like the FIAC system) and are totally inclusive of all possible events. Since any event can be classified, a totally inclusive system permits coding at a constant rate throughout the observation.

Each behaviour in Flanders category system is denoted by a code number. There is no scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale.

3.6.1 Advantages of the FIAC system

The FIAC system is popular among researchers because it can be used effectively after a few hours of training while other systems are difficult to use. Therefore, FIAC has been found to be suitable for collecting classroom data. Its main advantage is its easiness to train in its use, its suitability in collecting classroom interaction data, and the fact that Flanders (1970) himself has written a book on its usage and explained fully how to use it and what to do with the data collected with it and how to interpret such data. Many of the other category systems lack these advantages.
3.6.2 Drawbacks of the FIAC system

There have been some controversies about Flanders category system. The fact that it has only categorized verbal behaviour, has been considered a draw back. This is because in a classroom interchange, one cannot miss the non-verbal behaviours. However, the researcher was more interested in the verbal behaviours, rather than the non-verbal behaviours.

Another drawback of the FIAC system is that, it does not say what an observer should do when a teacher, for example, tells the students to do some work on their own or when the teacher is demonstrating. That is the reason why the researcher decided to modify it so that it could take this into account.

The reliability of observation may also go down as time goes on. There’s therefore, need for re-checking especially if a research has to take several months. The researcher over came this by ensuring that the data was collected within a short time (that is, two months).

Sometimes, it can be hard to classify some verbal behaviours, even after a long experience of using the instrument. This was overcomed by ensuring that the observer had gained enough experience and competence before actual collection of classroom data.

There are times also when the observer finds it hard to record any observation, due to a weakness in FIAC system. When there is communication breakdown
or when interaction between the teacher and pupils stops, one cannot continuously keep on writing 10s, because this will not represent what is really happening. In that case, the researcher had a notebook to record such happenings or events, that is, she took notes.

There has also been a major draw back of the observer personal bias in the use of the specified category system. Researchers have however, had little concern on the possible intrusive effects that an observer might have on the behaviour of the observed and the observation. Muthwii (1987), discussing systematic observation of class settings, indicated that teachers do actually behave differently when being observed than when not being observed. He further argued that, this should not be taken very seriously, but whatever can be done to minimise the disturbing effect of the observer should be done.

3.7 OBSERVER TRAINING

Before the observer went out for actual classroom observation, there was a preparatory period during which some training in verbal interaction categories took place. This training was done by an experienced observer on the use of FIAC system. Training for observation started with learning the FIAC categories. After all the categories had been memorized, a training for recording speed followed and the aim of this was to achieve a speed of 3 seconds per observation or observe 20-25 observations per minute. This is referred to as the time sampling unit.
This was done using tape recordings of live lessons, which provided an opportunity for good practice. During the training, a second observer (who was actually the trainer) was also involved. This was for the purpose of establishing reliability and validity of the data to be collected. According to Flanders (1970), the recommended initial practice time is 6-10 hours.

Practice in coding was done in a number of lessons for five minutes of each lesson until consistency was acquired, before analysing a full lesson. Each lesson was coded for 40 minutes (regular length of time for a single lesson in most secondary schools).

After listening and coding each lesson, the tape recording (videotape) would be stopped and discussed by the researcher and the trainer. The lesson would then be replayed if there was much discrepancy, which was then sorted out, to clear the differences. After using several live video taped lessons and establishing some consistency, the researcher then started observing actual Home Science lessons taught by some two selected Home Science teachers. This was actually the pilot study.

3.7.1 Inter-Observer Reliability

It is important to calculate reliability, which is an indicator of how much the two observers agreed in the proportional distribution within the categories. The importance of calculating reliability is to ascertain competence in
observing. This was done after the researcher had attained some consistency in recording classroom interchange.

Inter-observer reliability was calculated using Scott’s (1959) formula which is as follows:

\[ n = \frac{Po - Pe}{100 - Pe} \]

Where \( n \) is the inter-observer reliability

- \( Pe \) is the proportion of agreement by chance
- \( Po \) is the proportion of agreement which is determined by subtracting the Total percentage of the disagreement from 100.

A value of 0.85 was attained and this was considered satisfactory, because it showed a high degree of agreement.

### 3.7.2 Pilot Study

The researcher observed two Home Science teachers teaching Home Science in Form Two. The teachers were requested by the researcher to allow her to visit their classes for several lessons. This involved live classroom observation. The same procedure for coding the video-taped lessons (during training) was used. In addition, the researcher sat at a convenient place where she would be able to see all the interchanges in the classroom. The purpose of the pilot study was to ensure validity and reliability of the instrument (in this case FIAC) system that would be used in the main study.
Prior to these observations, 2-3 familiarization visits were made to the selected schools. The number of visits depended on the sensitivity of the teachers and students. Sensitivity in this case refers to how the teacher and students respond to the presence of the observer in the classroom. Some teachers and students are used to having visitors in their classroom, for example, inspectors of schools. Therefore, having the observer in the classroom would not have been very unusual to them. However, some teachers and students are not used to having visitors in their classrooms. Hence, the presence of the observer might make them very uneasy. Therefore, the more sensitive they were the more visits were required. Likewise, the less sensitive they were, the less visits required.

The familiarization visits were for the purpose of minimizing observer (Hawthorn) effect, which may affect the teacher's as well as the pupils' behaviours, hence give a false picture of what really happens in the classroom. During this time, no data was collected. After the familiarization visits, 5 lessons were observed.

During the live training, the two Home Science teachers were requested to teach normally and were assured that the observer was just a student interested in teaching Home Science and that the data collected would not be used for administrative purposes.
The pilot study is a miniature of the main study, therefore, all the steps carried out in the main study have to be carried out in the pilot study. However, the teachers used in the pilot study were not part of the main study. The pilot study was conducted in two schools, namely:

(i) Precious Blood Secondary School, Riruta.
(ii) Kayole Secondary School.

3.8 DATA COLLECTION

Prior to visiting the already selected schools (for data collection), letters were sent to the Principals of the schools, requesting them to allow the researcher to be in their school to conduct research in first term (January to March, 1999). The researcher actually took the letters personally to the schools so as to get faster responses from the schools. The letters indicated that the researcher would visit and observe the teaching of Home Science lessons. They further stated that the visits would purely be for research, not to inspect teachers. The requests were solicited using a research permit from the Office of the President.

3.9 PROCEDURES FOLLOWED FOR COLLECTING CLASSROOM INTERACTION DATA

After contacting the teachers to be used for the study, timetables were collected from them with the aim of making a visiting schedule. It was necessary to do this in order to know which teacher to observe at what time and in which lesson of the day.
As mentioned earlier, the observation was made using a modification of Flanders interaction analysis category (FIAC) system (see Appendix 1). Flanders argued that the spontaneous behaviour of a teacher is so complex, that an accurate description of it is most difficult.

Interaction analysis is an observation schedule designed to minimize the difficulties and permits systematic record of spontaneous acts so as to scrutinize the process of instruction by taking into account each small bit of interaction.

In teaching, either the teacher is speaking or one or more pupils are speaking. This provides two kinds of transitions: First, from the teacher to pupil(s) and second, from pupil to teacher. The teacher can talk to initiate his/her ideas or to respond to his/her students. In the same way, pupils can talk to respond to the teacher or to initiate their ideas. To initiate is to lead, to create a first event which then must be dealt with. To respond is to deal with an existing event, to comply, to confirm, and in other ways to be influenced by the first event. Some events may be hard to code, but these are negligible compared to the events that can be coded. These distinctions have a practical value analysing teacher and pupil communication.

Teachers were not given specific appointment. The days of observation depended on the teacher’s timetable. None of the teachers were observed on
all days allocated to her on the timetable, precisely because the researcher wanted to prevent special preparation on the part of the teachers. However, the teachers were informed that they would be observed on any of the days that they had a lesson on the timetable. The teachers were also assured that the observation was not for administrative purposes at all.

Before actual collection of data, the researcher visited the schools three times to familiarize herself with the teacher and pupils who were to be observed. In each visit, the researcher would sit at the back of the classroom, observe, but not record anything. This was done to minimize Hawthorn/observer effect. During each visit the researcher would talk and mix freely with both teachers and students to try to make herself more familiar and hence minimize Hawthorn effect.

This is important, as Borg and Gall (1971) argue:

Unless he is concealed, the observer is likely to have an impact on the observed. For example, an observer entering the classroom for the first time probably will arouse curiosity of the students and possibly the teacher, resulting in attentiveness of the students to the teacher. This may not reflect his usual behaviour and thus may provide non representative data. To prevent this situation the observer should not record any observation for the first time he is in the classroom.

It was not until the researcher became reasonably familiar with the teacher and the students, that she started coding the classroom interchange using the FIAC system. To do this the researcher (observer) would sit in the classroom in the best position in order to hear and see the participants. Almost as often as
possible (every 3 seconds) the researcher would decide which category best represents the communication event just completed. She would then write down the code number in a column on a coding sheet (one is provided in Appendix II), while she simultaneously assessed the continuing communication.

All the six teachers of the selected secondary schools were observed four times while teaching Home Science. The researcher observed double (eighty minutes) lessons, because most of the timetables did not make provisions for single lessons. All the data collected will be analysed and presented in the next chapter.
CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.0  INTRODUCTION

The objective of this study was to determine the variation of verbal classroom interaction patterns among Home Science teachers and their students in girls’, boys and mixed secondary schools in Nairobi Province.

This chapter presents analysis of data. It contains inferential statistical analysis which show the variation of teaching behaviour patterns of teachers in the schools mentioned above. The use of inferential statistics helped to ascertain whether the empirical variation was statistically significant or not. Descriptive statistics, such as, percentages, frequency distributions and tables were also used. These helped in data analysis and presentation, as the tables show the various behaviour patterns exhibited by the Home science teachers and the pupils. The frequency distributions show how frequent each of these behaviour patterns occurred. This was also expressed in percentages.

The results were used to describe the teacher – pupil interaction patterns existing in Home Science classrooms in Nairobi Province. The data was also used to describe patterns exhibited in the girls’, boys’ and mixed schools. Each analysis was accompanied by interpretation and discussion. The data was collected from six teachers, namely A,B,C,D,E & F and their students. The steps followed in analyzing the data are discussed later in this chapter.
4.1 PRECAUTION DURING OBSERVATION

For every observation the researcher made sure that she entered the classroom with the teacher to be observed. This was done to avoid disrupting the normal classroom activities.

Going earlier also helped in getting a good place where the researcher could be able to see and hear all that was going on in the classroom. The sitting position was usually at the back of the classroom so that her presence could not attract the attention of the pupils which would affect the observations.

4.2 PROBLEMS ENCOUNTERED DURING OBSERVATION

The researcher was only able to observe double lessons (80 minutes) since most of the Home Science timetables did not make provisions for single lessons. The researcher was however, not able to observe for all the 80 minutes because the lessons did not start or end on time. Therefore, the tallies per observation may differ. Also, sometimes some teachers gave so many activities in the four lessons that the time spent in recording was by far less than expected. This made the tally totals to be below the expected total of about 1600 per lesson.

4.3 PRESENTATION AND ANALYSIS OF DATA

Each teacher was observed four (4) times using a modified version of Flanders’ Interaction Analysis Category (FIAC) system.

In the previous chapter (Methodology), it was mentioned that the data would be analyzed using Flanders’ Matrix, which was for the purpose of calculating
chi-square results. However, the researcher used other simpler methods for calculating and analyzing the chi-square results. (see tables 4.11 – 4.14)

Relative frequency distributions of the Home Science teachers with their students are shown in tables 4.1 – 4.9. The percentages of the total frequencies are also shown.

The following are tables showing the verbal behaviour patterns of different teachers with their students in Nairobi Province.

**Table 4.1 The Verbal Interaction Patterns of Teacher A with her Students (Girls’ School)**

<table>
<thead>
<tr>
<th>Time taken per Lesson</th>
<th>Lesson 1 50 Minutes</th>
<th>Lesson 2 50 Minutes</th>
<th>Lesson 3 51 Minutes</th>
<th>Lesson 4 45 Minutes</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified FIAC Categories</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>17</td>
<td>67</td>
<td>1.59</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>45</td>
<td>55</td>
<td>48</td>
<td>203</td>
<td>4.81</td>
</tr>
<tr>
<td>3</td>
<td>148</td>
<td>146</td>
<td>147</td>
<td>129</td>
<td>570</td>
<td>13.52</td>
</tr>
<tr>
<td>4</td>
<td>160</td>
<td>140</td>
<td>143</td>
<td>132</td>
<td>575</td>
<td>13.64</td>
</tr>
<tr>
<td>5a</td>
<td>138</td>
<td>125</td>
<td>76</td>
<td>170</td>
<td>509</td>
<td>12.07</td>
</tr>
<tr>
<td>5b</td>
<td>38</td>
<td>19</td>
<td>44</td>
<td>13</td>
<td>114</td>
<td>2.70</td>
</tr>
<tr>
<td>5c</td>
<td>23</td>
<td>-</td>
<td>90</td>
<td>31</td>
<td>144</td>
<td>3.42</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>8</td>
<td>11</td>
<td>-</td>
<td>34</td>
<td>0.81</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>13</td>
<td>10</td>
<td>2</td>
<td>29</td>
<td>0.69</td>
</tr>
<tr>
<td>8</td>
<td>192</td>
<td>176</td>
<td>180</td>
<td>165</td>
<td>713</td>
<td>16.91</td>
</tr>
<tr>
<td>9</td>
<td>288</td>
<td>305</td>
<td>305</td>
<td>257</td>
<td>1155</td>
<td>27.40</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>36</td>
<td>26</td>
<td>21</td>
<td>103</td>
<td>2.44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1096</strong></td>
<td><strong>1028</strong></td>
<td><strong>1107</strong></td>
<td><strong>985</strong></td>
<td><strong>4216</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Teacher A generally used more of categories 1 (accepting students’ feelings), 2 (reinforcing) and 3 (accepting students’ ideas) as compared to category 6
(giving directions) and 7 (criticism). Category 1, 2 and 3 added up to 19.92% as compared to 6 and 7 which added up to 1.5%. The most dominant interaction pattern was category 9 [initiation (27.4%)] and this is because the teacher always gave the students time to express themselves, for example giving real/personal experiences. The least dominant is category 7 [criticism (0.69%)] because the teacher spent more time encouraging/reinforcing the students rather than criticizing them. Hence the students were encouraged to participate in the lesson.

The teacher also used a lot of category 4 [questioning (13.64%)] and the students responded in turn [category 8 (16.91%)]. Once in a while the teacher dictated notes and category 10 [silence or confusion (2.44%)] occurred when the students were given time by the teacher to take down the notes or write down what had just been discussed.

It was observed that in lesson 2, the teacher did not use any demonstrations. This is probably due to the nature of the topic which may not have required any demonstrations.

It was also observed that lesson 4 seemed shorter than the other three. This is because the teacher came late for the lesson due to other administrative duties. Therefore, since she was short of time, she used a lot of category 5a (lecturing without teaching aids) as compared to the other three lessons. In this lesson,
the teacher did not even have time to give the students an assignment or an activity to do, hence there was no use of category 6.

Table 4.2 shows the verbal interaction patterns of teacher B with her students.

Table 4.2 The Verbal Interaction Patterns of Teacher B with her students (Girls’ School)

<table>
<thead>
<tr>
<th>Time Taken per Lesson</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
<th>Lesson 4</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modfied FIAC Categories</td>
<td>70 Minutes</td>
<td>55 Minutes</td>
<td>65 Minutes</td>
<td>67 Minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>15</td>
<td>12</td>
<td>16</td>
<td>63</td>
<td>1.35</td>
</tr>
<tr>
<td>2</td>
<td>65</td>
<td>57</td>
<td>48</td>
<td>46</td>
<td>216</td>
<td>4.63</td>
</tr>
<tr>
<td>3</td>
<td>246</td>
<td>108</td>
<td>108</td>
<td>110</td>
<td>572</td>
<td>12.27</td>
</tr>
<tr>
<td>4</td>
<td>151</td>
<td>139</td>
<td>148</td>
<td>144</td>
<td>582</td>
<td>12.49</td>
</tr>
<tr>
<td>5a</td>
<td>220</td>
<td>115</td>
<td>102</td>
<td>110</td>
<td>547</td>
<td>11.74</td>
</tr>
<tr>
<td>5b</td>
<td>89</td>
<td>33</td>
<td>43</td>
<td>44</td>
<td>209</td>
<td>4.48</td>
</tr>
<tr>
<td>5c</td>
<td>-</td>
<td>-</td>
<td>58</td>
<td>54</td>
<td>112</td>
<td>2.40</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>14</td>
<td>38</td>
<td>33</td>
<td>92</td>
<td>1.97</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>11</td>
<td>18</td>
<td>6</td>
<td>39</td>
<td>0.84</td>
</tr>
<tr>
<td>8</td>
<td>202</td>
<td>174</td>
<td>195</td>
<td>186</td>
<td>757</td>
<td>16.24</td>
</tr>
<tr>
<td>9</td>
<td>316</td>
<td>324</td>
<td>340</td>
<td>323</td>
<td>1303</td>
<td>28.0</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>44</td>
<td>45</td>
<td>40</td>
<td>169</td>
<td>3.63</td>
</tr>
<tr>
<td>Total</td>
<td>1360</td>
<td>1034</td>
<td>1155</td>
<td>1112</td>
<td>4661</td>
<td>100</td>
</tr>
</tbody>
</table>

Teacher B, like teacher A, generally used more of category 1 (accepting student’s feelings), 2 (reinforcing) and 3 (accepting students’ ideas) as
compared to category 6 (directions) and 7 (criticism). Category 1, 2 and 3 added up to 18.25%, while category 6 and 7 added up to 2.81%.

The most dominant interaction pattern was category 9 (initiation) which took up 28% of the lesson, while the least dominant was category 7 (criticism) which took up 0.84% of the lessons. This shows that the teacher gave the students time to express themselves, hence making the learning environment more conducive to learning.

Teacher B also used a lot of category 4 [questioning (12.49%)] and the students responded in turn [category 8 (16.24%)]. Once in a while the teacher dictated notes and therefore, category 10 (silence) occurred when the teacher gave the students time to finish writing what she had just dictated. Category 10 also occurred when the students were asked to do something by the teacher, for example, ironing during a practical. It also occurred when many students were found to talk at the same time, for example, chorus answers.

It was also observed that there was no use of category 5c in lesson 1 and 2. This showed that no demonstrations took place in these two lessons as compared to the other two. Lesson 2 also seemed shorter than lesson 1, 3 and 4. This is because a lot of time was spent at the beginning of the lesson looking for an empty room as there was a clash in the timetable.
Note: In almost all the schools that offer Home Science, there is usually a Home Science room where the lectures and demonstrations/practicals normally take place. Therefore, some time is always wasted at the beginning of the lesson when the students are moving from their individual classrooms to the Home Science room.

Table 4.3 shows the verbal behaviour patterns of Home Science teachers and their students in girls' secondary schools in Nairobi Province.

Table 4.3: Verbal Classroom Interaction Patterns Across Girls' Schools

<table>
<thead>
<tr>
<th>Teacher Modified FIAC Categories</th>
<th>Teacher A</th>
<th>Teacher B</th>
<th>Cumulative Frequency of Teacher A &amp; B</th>
<th>% of Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67</td>
<td>63</td>
<td>130</td>
<td>1.46</td>
</tr>
<tr>
<td>2</td>
<td>203</td>
<td>216</td>
<td>419</td>
<td>4.72</td>
</tr>
<tr>
<td>3</td>
<td>570</td>
<td>572</td>
<td>1142</td>
<td>12.86</td>
</tr>
<tr>
<td>4</td>
<td>575</td>
<td>582</td>
<td>1157</td>
<td>13.03</td>
</tr>
<tr>
<td>5a</td>
<td>509</td>
<td>547</td>
<td>1056</td>
<td>11.90</td>
</tr>
<tr>
<td>5b</td>
<td>114</td>
<td>209</td>
<td>323</td>
<td>3.64</td>
</tr>
<tr>
<td>5c</td>
<td>144</td>
<td>112</td>
<td>256</td>
<td>2.88</td>
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<td>6</td>
<td>34</td>
<td>92</td>
<td>126</td>
<td>1.42</td>
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<td>1470</td>
<td>16.56</td>
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<td>1155</td>
<td>1303</td>
<td>2458</td>
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</tr>
<tr>
<td>10</td>
<td>103</td>
<td>169</td>
<td>272</td>
<td>3.06</td>
</tr>
<tr>
<td>Total</td>
<td>4216</td>
<td>4661</td>
<td>8877</td>
<td>100</td>
</tr>
</tbody>
</table>
From the above table, it can be observed that the two teachers from the girls' schools tended to display a similar kind of teaching behaviour pattern which is characterized by more use of category 3 [accepting students' feelings (12.86%)] and 4 [questioning {13.03%}). These are complemented by high frequency of category 9 [students' initiation (27.69%)] and 8 [students' responses (16.56%)] respectively.

Generally, these teachers used more of categories 1, 2 and 3 as compared to category 6 and 7. Accepting students' feelings, reinforcing their responses and accepting their ideas encouraged the students to participate in the classroom interchange and also provided them with the opportunity to initiate their own ideas. Less use of directions [category 6 (1.42%)] and criticism [category 7 (0.77%)] by the teachers gave the students a chance to involve themselves freely in the classroom talk.

Also by asking the students questions, the teachers ensured that the students participated in the lesson by responding to the questions. Therefore, these teachers' behaviour seemed to encourage students to participate more by providing the students with immediate feedback.

Table 4.4 shows the interaction patterns of Teacher C with her students.
Table 4.4: Verbal Interaction Patterns of Teacher C with her Students (Boys’ School)

<table>
<thead>
<tr>
<th>Time Taken Per Lesson</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
<th>Lesson 4</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>52 Minutes</td>
<td>46 Minutes</td>
<td>55 Minutes</td>
<td>51 Minutes</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>Modified FIAC Categories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>0.17</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>30</td>
<td>36</td>
<td>21</td>
<td>123</td>
<td>2.91</td>
</tr>
<tr>
<td>4</td>
<td>168</td>
<td>146</td>
<td>126</td>
<td>138</td>
<td>578</td>
<td>13.67</td>
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<td>461</td>
<td>558</td>
<td>555</td>
<td>2056</td>
<td>48.63</td>
</tr>
<tr>
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<td>19</td>
<td>90</td>
<td>8</td>
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<td>3.00</td>
</tr>
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<td>5c</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>0.17</td>
</tr>
<tr>
<td>6</td>
<td>65</td>
<td>60</td>
<td>64</td>
<td>62</td>
<td>251</td>
<td>5.94</td>
</tr>
<tr>
<td>7</td>
<td>64</td>
<td>60</td>
<td>65</td>
<td>70</td>
<td>259</td>
<td>6.13</td>
</tr>
<tr>
<td>8</td>
<td>164</td>
<td>145</td>
<td>124</td>
<td>129</td>
<td>562</td>
<td>13.29</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>33</td>
<td>0.78</td>
</tr>
<tr>
<td>10</td>
<td>69</td>
<td>61</td>
<td>36</td>
<td>59</td>
<td>225</td>
<td>5.32</td>
</tr>
<tr>
<td>Total</td>
<td>1074</td>
<td>993</td>
<td>1109</td>
<td>1052</td>
<td>4228</td>
<td>100</td>
</tr>
</tbody>
</table>

There was less use of category 1 (accepting student’s feelings), 2 (reinforcing) and 3 (accepting students’ ideas) and a high use of category 6 (directions) and 7 (criticism). Category 1, 2 and 3 added up to 3.08%, while category 6 and 7 added up to 12.07%. In fact, the teacher did not use category 1 at all during the
four lessons. This restrained the students’ freedom to participate, hence less use of category 9 [initiation (0.78%)] as the teacher lectured most of the time. Category 5a (lecture without teaching aids) was the most dominant and took up 48.63% of the lesson time, while the least dominant was category 1, which did not even occur. Teacher C dictated notes a lot, hence high use of category 10 [silence/confusion (5.32%)] which was spent on students writing notes after dictation.

Most of category 5b [lecture with teaching aids (3%)] was spent on writing on the chalkboard because the teacher rarely brought teaching aids to the class during the lesson. She also hardly used category 5c [lecture with demonstration (0.17%)] which showed that the teacher was not in the habit of using demonstrations/practicals in her teaching. When asked by the researcher why this was the case, the teacher said that they did not usually have practicals in Form 1 and 2, yet Home Science is a practical subject.

There was also high use of category 4 [questioning (13.67%)] which was complemented by high use of category 8 [students’ responses (13.29%)].

Lesson 2 seemed slightly shorter than the other three lessons and this was because the teacher came late as she was in a meeting, which was held at tea-break. Therefore, the lesson started late.

Table 4.5 shows the verbal interaction patterns of teacher D with her students.
<table>
<thead>
<tr>
<th>Modified FIAC Categories</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
<th>Lesson 4</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time Taken Per Lesson</td>
<td>55 Minutes</td>
<td>53 Minutes</td>
<td>53 Minutes</td>
<td>58 Minutes</td>
<td>Observation</td>
</tr>
<tr>
<td>1.</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>28</td>
<td>0.61</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>32</td>
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<td>180</td>
<td>191</td>
<td>187</td>
<td>172</td>
<td>730</td>
<td>16.01</td>
</tr>
<tr>
<td>5a</td>
<td>447</td>
<td>379</td>
<td>377</td>
<td>423</td>
<td>1626</td>
<td>35.66</td>
</tr>
<tr>
<td>5b</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>38</td>
<td>0.83</td>
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<td>50</td>
<td>34</td>
<td>27</td>
<td>18</td>
<td>129</td>
<td>2.83</td>
</tr>
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<td>6</td>
<td>83</td>
<td>86</td>
<td>96</td>
<td>125</td>
<td>390</td>
<td>8.55</td>
</tr>
<tr>
<td>7</td>
<td>118</td>
<td>136</td>
<td>126</td>
<td>140</td>
<td>520</td>
<td>11.40</td>
</tr>
<tr>
<td>8</td>
<td>172</td>
<td>180</td>
<td>189</td>
<td>175</td>
<td>716</td>
<td>15.70</td>
</tr>
<tr>
<td>9</td>
<td>20</td>
<td>24</td>
<td>20</td>
<td>32</td>
<td>96</td>
<td>2.11</td>
</tr>
<tr>
<td>10</td>
<td>51</td>
<td>27</td>
<td>24</td>
<td>42</td>
<td>144</td>
<td>3.16</td>
</tr>
<tr>
<td>Total</td>
<td>1166</td>
<td>1108</td>
<td>1104</td>
<td>1182</td>
<td>4560</td>
<td>100</td>
</tr>
</tbody>
</table>

Like teacher C, teacher D used less of category 1 (accepting students' feelings), 2 (reinforcing) and 3 (accepting students' ideas) and a high use of category 6 (directions) and 7 (criticism). Category 1,2 and 3 added up to 3.75% while category 6 and 7 added up to 19.95%. The teacher used category 1 only in lesson 2 and did not use category 2 at all in lesson 1. This restrained the
students’ freedom to participate. As a result there was less use of category 9 [students’ initiation (2.11%)] as the teacher lectured most of the time.

Category 5a (lecture without teaching aids) was the most dominant as it took up 35.66% of the lesson time, while the least dominant was category 1 as only 0.07% of the lesson time was spent on it. However, teacher D made use of category 5c [lecture using demonstrations (2.83%)] though it was minimal, unlike teacher C.

Teacher D was a harsh teacher who even went to an extent of beating the students physically and also abusing them verbally, that is, calling them names. Some students usually spent almost an entire lesson on punishment, for example, sitting on the floor, facing the back of the Home Science room, or running round the field. On one occasion, the whole class, except two boys were punished for not bringing soap for making soap jelly. Teacher D even went as far as confessing to the researcher that her strictness normally discouraged many students from selecting Home Science, because they were afraid of her.

Table 4.6 shows the verbal behaviour patterns of Home Science teachers and their students in boys’ secondary schools in Nairobi Province.
Table 4.6  Verbal Classroom Interaction Patterns Across Boys’ Schools

<table>
<thead>
<tr>
<th>Modified FIAC Categories</th>
<th>Teacher C</th>
<th>Teacher D</th>
<th>Cumulative Frequency of Teacher C &amp; D</th>
<th>% of Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>0.03</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>28</td>
<td>35</td>
<td>0.40</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
<td>578</td>
<td>730</td>
<td>1308</td>
<td>14.88</td>
</tr>
<tr>
<td>5a</td>
<td>2056</td>
<td>1626</td>
<td>3682</td>
<td>41.90</td>
</tr>
<tr>
<td>5b</td>
<td>127</td>
<td>38</td>
<td>165</td>
<td>1.88</td>
</tr>
<tr>
<td>5c</td>
<td>7</td>
<td>129</td>
<td>136</td>
<td>1.55</td>
</tr>
<tr>
<td>6</td>
<td>251</td>
<td>390</td>
<td>641</td>
<td>7.30</td>
</tr>
<tr>
<td>7</td>
<td>259</td>
<td>520</td>
<td>779</td>
<td>8.86</td>
</tr>
<tr>
<td>8</td>
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<td>9</td>
<td>33</td>
<td>96</td>
<td>129</td>
<td>1.47</td>
</tr>
<tr>
<td>10</td>
<td>225</td>
<td>144</td>
<td>369</td>
<td>4.20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4228</strong></td>
<td><strong>4560</strong></td>
<td><strong>8788</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Both teachers displayed a high frequency of category 5a (lecture without teaching aids) which was actually the most dominant pattern, as it took up 41.90% of the lesson time.

There was also a high frequency of category 4 [questioning (14.88%)] which was complemented by a high frequency of category 8 [students’ responses
(14.54%). This was drill type of teaching, where students' responses were limited by the teachers' questions.

It also showed less use of category 1 (accepting students' feelings) and 2 (reinforcing), and a high use of categories 6 (directions on what to do) and 7 (criticism). Category 1,2 and 3 added up to 3.42% while category 6 and 7 added up to 16.16%.

This kind of teaching behaviour patterns restrained the students' freedom to participate freely in the classroom talk, because the teachers lectured most of the time. It discouraged students from participating, for example, initiation [category 9 (1.47%)].

Table 4.7 shows the verbal interaction patterns of teacher E with her students.

**Table 4.7: Verbal Interaction Patterns of Teacher E with her Students (Mixed School)**

<table>
<thead>
<tr>
<th>Modified FIAC Categories</th>
<th>Lesson 1 49 Minutes</th>
<th>Lesson 2 50 Minutes</th>
<th>Lesson 3 55 Minutes</th>
<th>Lesson 4 50 Minutes</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>15</td>
<td>16</td>
<td>15</td>
<td>61</td>
<td>1.44</td>
</tr>
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<td>2</td>
<td>31</td>
<td>29</td>
<td>27</td>
<td>30</td>
<td>117</td>
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</tr>
<tr>
<td>3</td>
<td>88</td>
<td>106</td>
<td>103</td>
<td>92</td>
<td>389</td>
<td>9.19</td>
</tr>
<tr>
<td>4</td>
<td>150</td>
<td>157</td>
<td>153</td>
<td>148</td>
<td>608</td>
<td>14.36</td>
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<td>364</td>
<td>284</td>
<td>1115</td>
<td>26.33</td>
</tr>
<tr>
<td>5b</td>
<td>40</td>
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<td>144</td>
<td>3.40</td>
</tr>
<tr>
<td>5c</td>
<td>-</td>
<td>26</td>
<td>-</td>
<td>-</td>
<td>26</td>
<td>0.61</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
<td>33</td>
<td>33</td>
<td>34</td>
<td>134</td>
<td>3.16</td>
</tr>
<tr>
<td>7</td>
<td>44</td>
<td>40</td>
<td>54</td>
<td>50</td>
<td>188</td>
<td>4.44</td>
</tr>
<tr>
<td>8</td>
<td>152</td>
<td>158</td>
<td>155</td>
<td>151</td>
<td>616</td>
<td>14.55</td>
</tr>
<tr>
<td>9</td>
<td>175</td>
<td>160</td>
<td>161</td>
<td>159</td>
<td>655</td>
<td>15.47</td>
</tr>
<tr>
<td>10</td>
<td>38</td>
<td>49</td>
<td>50</td>
<td>45</td>
<td>182</td>
<td>4.30</td>
</tr>
<tr>
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<td>1030</td>
<td>1155</td>
<td>1043</td>
<td>4235</td>
<td>100</td>
</tr>
</tbody>
</table>
Teacher E generally used more of categories 1 (accepting students' feelings), 2 (reinforcing) and 3 (accepting students' ideas) as compared to category 6 (giving directions) and 7 (criticism). Category 1, 2 and 3 added up to 13.39%, while category 6 and 7 added up to 7.6%. As a result, students were encouraged to participate, hence high use of category 9 [students' initiation (15.47%)].

The most dominant interaction pattern was category 5a (lecture without teaching aids) which took up 26.33% of the lesson time. This was as a result of less use of category 5b [lecture with teaching aids (3.4%)] and 5c [lecture with demonstrations (0.61%)], which is actually the least dominant. In fact, the teacher only used category 5c in lesson 2. This meant that the teacher is not in the habit of using demonstrations/practicals in her teaching, yet Home Science is a practical subject. When asked by the researcher why this was the case, the teacher explained that the school did not have adequate facilities for practicals. The researcher confirmed this by visiting the Home Science room and storeroom.

Teacher E had a habit of asking questions which she did not expect answers to. She normally answered the questions herself through category 5a, which was predominant. Category 5b occurred when the teacher wrote on the chalkboard, since she did not bring any teaching aids to class during the lesson. However, teacher E also asked questions [category 4 (14.36%)] which she expected students to respond to [category 8 (14.55%)].
The teacher also had a habit of creating humour in the classroom and this made the students laugh once in a while, hence category 10 [silence/confusion (4.3%)]. However, part of category 10 also occurred when students were writing notes, for example, when the students were given time to write down what the teacher had just said or dictated.

Table 4.8 shows the verbal interaction patterns of teacher F with her students.

Table 4.8  Verbal Interaction Patterns of Teacher F with her Students (Mixed School)

<table>
<thead>
<tr>
<th>Modified FIAC Categories</th>
<th>Time Taken per Lesson</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
<th>Lesson 3</th>
<th>Total Observation</th>
<th>% of Total Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>50 Minutes</td>
<td>60 Minutes</td>
<td>54 Minutes</td>
<td>50 Minutes</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>12</td>
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<td></td>
<td>1.20</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>30</td>
<td>26</td>
<td>30</td>
<td>108</td>
<td></td>
<td>2.35</td>
</tr>
<tr>
<td>3</td>
<td>109</td>
<td>140</td>
<td>103</td>
<td>105</td>
<td>457</td>
<td></td>
<td>9.95</td>
</tr>
<tr>
<td>4</td>
<td>122</td>
<td>175</td>
<td>147</td>
<td>124</td>
<td>568</td>
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<td>12.36</td>
</tr>
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<td>258</td>
<td>334</td>
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<td></td>
<td>27.01</td>
</tr>
<tr>
<td>5b</td>
<td>25</td>
<td>31</td>
<td>41</td>
<td>30</td>
<td>127</td>
<td></td>
<td>2.76</td>
</tr>
<tr>
<td>5c</td>
<td>-</td>
<td>78</td>
<td>33</td>
<td>4</td>
<td>115</td>
<td></td>
<td>2.50</td>
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<td>1129</td>
<td>1063</td>
<td>4594</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
Teacher F, like teacher E showed a high use of category 1 (accepting students’ feelings), 2 (reinforcing) and 3 (accepting students’ ideas) as compared to categories 6 (directions) and 7 (criticism). Category 1, 2 and 3 added up to 13.5%, while category 6 and 7 added up to 9.83%. This encouraged students to participate in the lesson, hence high use of category 9 [students’ initiation (14.56%)]. However, the teacher had a habit of punishing students in class during the lesson, and this might prevent the students from participating so much in the lesson.

The most dominant interaction pattern was category 5a (lecture without teaching aids) which took up 27.01% of the lesson time. This was brought about by minimal use of category 5b [lecture with teaching aids (2.76%)] and 5c [lecture using demonstrations (2.5%)]. Unlike teacher E, teacher F used some demonstrations in her teaching. She also had a habit of bringing teaching aids to class during the lesson.

The least dominant interaction pattern was category 1 [accepting students’ feelings (1.2%)]. Most of these accepted feelings were from the girls, since the boys tended to shy off from participating. This was because the teacher tended to criticize them more than the girls. She even had the habit of using the boys as examples, which might be very demoralising for the boys, who may not have the courage to attempt answering questions or even initiating. This may in turn affect the selection of the subject.
Category 10 occurred when students were writing notes, or doing a practical.
A lot of category 10 also occurred on one occasion when the teacher gave the students a quiz for about 10 – 15 minutes.

Table 4.9 shows the verbal behaviour patterns of Home Science teachers and their students in mixed secondary schools in Nairobi Province.

Table 4.9: Verbal Classroom Interaction Patterns Across Mixed Schools

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Modified Teacher E</th>
<th>Teacher F</th>
<th>Cumulative Frequency of Teacher E &amp; F</th>
<th>% of Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>61</td>
<td>55</td>
<td>116</td>
<td>1.31</td>
</tr>
<tr>
<td>2</td>
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<td>2.55</td>
</tr>
<tr>
<td>3</td>
<td>389</td>
<td>457</td>
<td>846</td>
<td>9.58</td>
</tr>
<tr>
<td>4</td>
<td>608</td>
<td>568</td>
<td>1176</td>
<td>13.32</td>
</tr>
<tr>
<td>5a</td>
<td>1115</td>
<td>1241</td>
<td>2356</td>
<td>26.68</td>
</tr>
<tr>
<td>5b</td>
<td>144</td>
<td>127</td>
<td>271</td>
<td>3.07</td>
</tr>
<tr>
<td>5c</td>
<td>26</td>
<td>115</td>
<td>141</td>
<td>1.60</td>
</tr>
<tr>
<td>6</td>
<td>134</td>
<td>223</td>
<td>357</td>
<td>4.04</td>
</tr>
<tr>
<td>7</td>
<td>188</td>
<td>229</td>
<td>417</td>
<td>4.72</td>
</tr>
<tr>
<td>8</td>
<td>616</td>
<td>511</td>
<td>1127</td>
<td>12.76</td>
</tr>
<tr>
<td>9</td>
<td>655</td>
<td>669</td>
<td>1324</td>
<td>15.0</td>
</tr>
<tr>
<td>10</td>
<td>182</td>
<td>291</td>
<td>473</td>
<td>5.36</td>
</tr>
<tr>
<td>Total</td>
<td>4235</td>
<td>4594</td>
<td>8829</td>
<td>100</td>
</tr>
</tbody>
</table>
These teachers also displayed a high frequency of category 5a [lecturing without teaching aids (26.68%)] which was actually the most dominant. It was also observed that there was a high frequency of category 3 [accepting students' ideas (9.58%)] and 4 [questioning (13.32%)] which were complemented by a high frequency of category 9 [initiation (15%)] and 8 [students' responses (12.76%)] respectively.

Generally, the teachers used more of category 1 (accepting students' feelings), 2 (reinforcing) and 3 (accepting students' ideas) as compared to 6 (directions) and 7 (criticism). Category 1,2 and 3 added up to 13.44%, while category 6 and 7 added up to 8.76%. This encouraged the students to participate in the classroom discussions and also provided them with the opportunity to initiate their own ideas. However, the use of category 6 and 7, to some extent, restrained the students from freely participating in the classroom talk, especially because the teachers lectured most of the time.

4.4 A GENERAL OUTLOOK OF THE NATURE OF VERBAL CLASSROOM INTERACTION OF HOME SCIENCE TEACHERS IN GIRLS', BOYS' AND MIXED SCHOOLS

Before actual calculations of the nature of verbal classroom interaction patterns of the three categories (girls', boys', mixed) of teachers, it was worthwhile considering a picture representing a general outlook of the verbal classroom interaction patterns of the three categories of teachers and their students.
FIG. 4.1 NATURE OF VERBAL CLASSROOM INTERACTION PATTERNS OF TEACHERS IN GIRLS', BOYS' AND MIXED SCHOOLS
Fig 4.1 illustrates graphically a general picture represented by a histogram of the nature of classroom interaction for the three categories of teachers.

This histogram indicates a general comparison for the teachers in girls', boys' and mixed schools, with the 12 categories (that is, counting 5a, 5b and 5c as three categories). On plotting the histogram, in cases where the percentage of tallies of similar behaviour was relatively small, several categories were combined, for example, category 1,2 and 3.

From the histogram (fig 4.1) it can be observed that teachers in girls' schools and mixed schools relatively used categories 1,2 and 3 more than those in boys' schools. They spent 15.62% and 10.02% respectively, more time than did the teachers in boy’s schools. This means that these teachers in the girls' and mixed schools praised their students more, considered students’ personal feelings more, encouraged students more and used students’ ideas more either by modifying them, clarifying them or rephrasing them.

Teachers in girls’ schools and mixed schools used fewer questions than did those in boys’ schools. However, it was noted that the type of questions used by the teachers in boys’ schools were mainly routine questions which included question answer pattern without any efforts to incorporate the inquiry kind of questions. The teachers in girls’ schools asked questions which were usually probing and continued the question with a particular student for a longer time which meant that the students were helped to think more. This is category 4.
As seen from the histogram, the teachers in the boys’ schools used relatively more lecture than did the teachers in girls’ and mixed schools. This is category 5a, 5b and 5c. It was however, noted that all the teachers in all the three categories of schools tended to use more of category 5a and 5b and 5c. This means that most of the time the teachers taught theoretically, whereas Home Science is a practical subject.

Teachers in girls’ schools used relatively less directions and commands (category 6) and criticisms (category 7) than teachers in boys’ and mixed schools. This tended to discourage students from participation in the classroom interchange.

On student participation, it can be observed that teachers in girls’ schools allowed more student participation than those in boys’ and mixed schools. These are categories 8 and 9. This was brought about by more use of categories 1,2 and 3.

It can also be observed from the histogram that there was more silence and confusion in mixed classes than in girls’ and boys’. This occurred when students were taking down notes, for example after the teacher had dictated or after a discussion. It also occurred when students were found to talk at the same time, which was coded as category 10.
4.5 DISCUSSIONS AND INTERPRETATIONS OF i/d RATIOS

In order to understand better the teaching behaviour patterns of teachers, it is important to determine the prevailing classroom climate. Analysing classroom climate helped to reveal further information about the teaching behaviour patterns of teachers.

There are three types of classroom climate created by different teachers. Democratic teaching behaviour pattern refers to classroom teacher behaviour whereby the students are allowed to share and contribute a lot and freely in the classroom discussion. Whereas, autocratic teacher behaviour pattern refers to teacher’s verbal behaviour whereby the students’ feelings are not considered and the teacher dominates in the classroom talk. A student just listens and obeys orders. Laissez-faire climate is when the students do as they please, without caring at all what goes on in the classroom because the teacher is not in control.

Classroom climate enabled the researcher to determine whether the teachers were autocratic or democratic. To find out classroom climate, the researcher calculated the i/d ratio of the different teachers. The i/d ratio is calculated by adding the sum total of indirect behaviour represented by category 1, 2 and 3 divided by the sum total of direct behaviour represented by category 6 and 7. On the basis of i/d ratio, one can determine the behaviour patterns of the teacher responsible for the students’ learning.
It was important to determine the i/d ratio because the classroom climate may have either enhanced or hindered pupils participation in the classroom which in turn affected the total teaching behaviour patterns. It also related to the verbal categories which enhanced or curtailed pupil participation. The teachers could therefore choose to be indirect by maximizing the freedom of the pupils to respond or could also choose to be direct by minimizing the freedom of the pupils to respond.

Table 4.10 shows the i/d ratios of teachers in the different schools.

**Table 4.10 i/d Ratio of Home Science Teachers in Girls’, Boys’ and Mixed Schools**

<table>
<thead>
<tr>
<th>Nature Of School</th>
<th>FIAC Categories</th>
<th>Categories 1,2,3 (i)</th>
<th>Categories 6,7 (d)</th>
<th>i/d Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls’</td>
<td>1691</td>
<td>194</td>
<td></td>
<td>8.72</td>
</tr>
<tr>
<td>Boys’</td>
<td>301</td>
<td>1420</td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>Mixed</td>
<td>1187</td>
<td>774</td>
<td></td>
<td>1.53</td>
</tr>
</tbody>
</table>

From the above results, it is clear that the i/d ratio of teachers in girls’ and mixed schools was greater than one. An i/d ratio of more than one shows that the classroom climate was democratic. The students were allowed to share, contribute and engage freely in the classroom discussion. This shows that teachers in these schools offered opportunities to their students to participate.
freely in the classroom talk. The democratic climate in the mixed schools can
be attributed to the fact that there were more girls in the classrooms than the
boys.

It is also clear from the table that the i/d ratio of teachers in boys’ schools was
less than one. An i/d ratio of less than one shows that the classroom climate is
autocratic. The teachers in these schools dominated the classroom talk. The
students just listened and obeyed orders from the teachers. Students’ feelings
were not considered.

Therefore, from the above results, teachers in girls’ and mixed schools
displayed a democratic classroom climate, while those in boys’ schools
demonstrated an autocratic classroom climate.

In order to establish the differences in the verbal interaction patterns of
teachers in the different schools, it was deemed necessary to use chi-square.
This was to test significance level of the differences in teaching behaviour
patterns of the different teachers. Chi-square results helped to determine
whether the observed difference in teaching behaviour patterns among teachers
in girls’, boys’ and mixed schools were statistically significant or not. The
researcher used 95% level of confidence, above which the difference would be
statistically significant.
The researcher extracted from tables 4.3, 4.6 and 4.9, the different types of direct and indirect teacher behaviour patterns for analysis. The different types of student talk were also extracted for analysis.

In calculating chi-square, the researcher first calculated the expected frequency. The formula used to calculate chi-square was

\[ \chi^2 = \sum \frac{(O - E)^2}{E} \]

Where \( \sum \) is summation

\( O \) is observed frequency \((fo)\)

\( E \) is expected frequency \((fe)\)

4.6 DISCUSSION AND INTERPRETATION OF CHI-SQUARE RESULTS

In this section, chi-square results are discussed in order to establish the teaching behaviour patterns of teachers in the different schools. The patterns were established by looking at indirect and direct teachers' teaching behaviour patterns. It established whether the difference in teaching behaviour patterns among teachers in girls', boys' and mixed schools was statistically significant or not.

The patterns were also established by looking at Student Talk (ST), since it is also part of the verbal interaction in the classroom. This established whether
the difference in the student talk in girls', boys' and mixed schools was statistically significant or not.

Results of the teachers' indirect teaching behaviour patterns in the different schools are shown on table 4.12. The indirect teaching behaviour pattern is represented by (i) which is made up of category 1,2 and 3, while (l) is made up of category 1,2,3 and 4.

Table 4.11 shows the calculation of the expected frequency. To determine the expected frequency for each cell when the expected distribution is random, we multiply the number of frequencies contained in the entire row by the number of frequencies contained in the entire column in which the cell is located and divide that product by N. For example:

\[
\frac{2848 \times 249}{6820} = 104
\]

Table 4.11: Calculation of the Expected Frequency for Categories 1,2,3 and 4

<table>
<thead>
<tr>
<th>FIAC Categories</th>
<th>Nature Of School</th>
<th>GIRLS'</th>
<th>BOYS'</th>
<th>MIXED</th>
<th>Total Of fo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fo</td>
<td>fe</td>
<td>fo</td>
<td>fe</td>
<td>fo</td>
</tr>
<tr>
<td>1</td>
<td>130</td>
<td>104</td>
<td>3</td>
<td>59</td>
<td>116</td>
</tr>
<tr>
<td>2</td>
<td>419</td>
<td>284</td>
<td>35</td>
<td>160</td>
<td>225</td>
</tr>
<tr>
<td>3</td>
<td>1142</td>
<td>940</td>
<td>263</td>
<td>531</td>
<td>846</td>
</tr>
<tr>
<td>4</td>
<td>1157</td>
<td>1520</td>
<td>1308</td>
<td>859</td>
<td>1176</td>
</tr>
<tr>
<td>Total</td>
<td>2848</td>
<td>2848</td>
<td>1609</td>
<td>1609</td>
<td>2363</td>
</tr>
</tbody>
</table>
Table 4.12 The Nature of Indirect Teaching Behaviour Patterns of Teachers in Girls', Boys' and Mixed Schools

<table>
<thead>
<tr>
<th>Nature Of School</th>
<th>FIAC Categories</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Total $\chi^2$ of 1,2,3 (I)</th>
<th>4</th>
<th>Total $\chi^2$ of 1,2,3,4 (I)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fo</td>
<td>fe</td>
<td>fo</td>
<td>fe</td>
<td>fo</td>
<td>fe</td>
<td></td>
</tr>
<tr>
<td>Girls'</td>
<td>130</td>
<td>104</td>
<td>419</td>
<td>284</td>
<td>1142</td>
<td>940</td>
<td></td>
</tr>
<tr>
<td>Boys'</td>
<td>3</td>
<td>59</td>
<td>35</td>
<td>160</td>
<td>263</td>
<td>531</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>116</td>
<td>86</td>
<td>225</td>
<td>235</td>
<td>846</td>
<td>780</td>
<td></td>
</tr>
<tr>
<td>$\Sigma(O-E)^2/E$</td>
<td>70.2</td>
<td>162.2</td>
<td>184.3</td>
<td></td>
<td>416.7</td>
<td>327.3</td>
<td>743.9</td>
</tr>
</tbody>
</table>

Degrees of freedom (df) is calculated using $df = (r - 1)(c - 1)$

Where $r$ is total number of rows

$c$ is total number of columns

At 4df the $\chi^2$ results for (i) is 416.7. The critical value of $\chi^2$ for the 0.05 level of significance is 9.49. At 6 df the $\chi^2$ results for (I) is 743.9. The critical value of $\chi^2$ for the 0.05 level of significance is 12.6. Both $\chi^2$ values are statistically significant because they are more than the critical values.

Therefore, this shows that there are significant differences in the indirect teaching behaviour patterns of Home Science teachers in girls', boys' and mixed schools. The difference is evident in all the four categories. For example, there is more use of category 1,2 and 3 in girls' and mixed schools.
than in boys’. However, the teachers in boys’ secondary schools use category 4 more than those in girls’ and mixed schools.

Table 4.13 shows the results of the teachers’ direct teaching behaviour patterns in the different schools. The direct teaching behaviour pattern is represented by (d) which is made up of category 6 and 7 while (D) is made up of category 5a, 5b, 5c, 6 and 7. The $\chi^2$ results will be used to test if the direct teaching behaviour patterns of the teachers in girls, boys and mixed schools differ statistically.

<table>
<thead>
<tr>
<th>Nature Of School</th>
<th>FIAC Categories</th>
<th>Total $\chi^2$ of 6,7 (d)</th>
<th>5a</th>
<th>5b</th>
<th>5c</th>
<th>Total of $\chi^2$ 6,7,5a, 5b,5c (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fo fo fo fo</td>
<td>fo fo fo fo fo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls’</td>
<td>126 191 68 215</td>
<td>1056 1204 323 129 256 90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys’</td>
<td>641 564 779 634</td>
<td>3682 3558 165 380 136 267</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>357 369 417 415</td>
<td>2356 2332 271 250 141 176</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Sigma(O-E)^2/E$</td>
<td>32.99 133.71</td>
<td>22.8 415.2 420.4</td>
<td></td>
<td></td>
<td></td>
<td>1025.1</td>
</tr>
</tbody>
</table>

At 2df the $\chi^2$ results for (d) is 166.7. The critical value of $\chi^2$ for the 0.05 level of significance is 5.99. At 8 df the $\chi^2$ results for (D) is 1025.1. The critical value of $\chi^2$ for the 0.05 level of significance is 15.5. Both $\chi^2$ values are statistically significant because they exceed the critical values by so much.
Therefore, this shows that there are significant differences in the direct teaching behaviour patterns of Home Science teachers in girls’, boys’ and mixed schools. This difference is evident in all the five categories. For example, there is more use of category 6, 7 and 5a in boys’ schools than in girls’ and mixed schools. Categories 5b and 5c are used more in girls’ schools than in boys’ and mixed schools.

Table 4.14 shows results of students talk (ST). The $\chi^2$ results were used to determine whether there is a significant difference in the student talk in the different schools.

<table>
<thead>
<tr>
<th>Nature Of School</th>
<th>FIAC Categories</th>
<th>8</th>
<th>9</th>
<th>Total $\chi^2$ of 8,9 (ST)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fo</td>
<td>fe</td>
<td>fo</td>
<td>fe</td>
</tr>
<tr>
<td>Girls’</td>
<td>1470</td>
<td>1955</td>
<td>2458</td>
<td>1973</td>
</tr>
<tr>
<td>Boys’</td>
<td>1278</td>
<td>700</td>
<td>129</td>
<td>707</td>
</tr>
<tr>
<td>Mixed</td>
<td>1127</td>
<td>1220</td>
<td>1324</td>
<td>1231</td>
</tr>
<tr>
<td>$\Sigma(O-E)^2/E$</td>
<td>604.7</td>
<td></td>
<td>598.7</td>
<td></td>
</tr>
</tbody>
</table>

At 2df the $\chi^2$ results for (ST) is 1203.4. The critical value for the 0.05 level of significance is 5.99. Since the computed $\chi^2$ value exceeds this, then it can be concluded that there are significant differences in the student talk in the Home
Science classrooms in boys', girls' and mixed schools. This is evident in both categories (that is 8 and 9).

The time taken by student talk determined the kind of classroom interchange the class had. The higher the occurrence of category 9 (students’ initiation) meant that teachers gave ample time and opportunity to the students to participate freely in the classroom talk. This led to heuristic method of teaching whereby the learner participates actively in the learning process. Heuristic method reinforced the students’ actions and motivated them to participate more in the learning process. The teachers achieved this by using category 3 (accepting students’ ideas) and 2 (reinforcing students’ responses). In order to achieve more of category 8 (students’ responses), the teachers used category 4 (questioning).

4.7 OTHER FINDINGS
It was observed that there was more teacher-pupil interaction in those classrooms where there were few students, for example 10 students as compared to a class of 30 students and above. In the former, it was possible for the teacher to ensure that each of the students participates, as compared to the latter. It is also easier to carry out a practical with a smaller group than a larger one.

The researcher also noted that all the teachers who were observed were all female teachers. This could be attributed to the general attitude held by people, that Home Science is a subject for women.
4.8 SUMMARY OF THE FINDINGS

The researcher found out that, the teachers' use of category 1 (accepting students' feelings), 2 (reinforcing), 3 (accepting students' ideas) and 4 (questions), elicited the most responses from the students.

The chi-square results of the teaching behaviour patterns of teachers and their students have established that teachers vary in their teaching methods, depending on the gender of the students they are teaching. The Home Science teachers teaching in boys' schools involved a great deal of drill teaching. The lessons were noted to be highly controlled by the teachers, who determined the type of learning taking place. As a result, the students had no opportunity to participate in the lesson creatively because they had to comply with the teachers' directions and questions as they made verbal responses.

As the literature review established, teaching is best approached through creative inquiry patterns than drill teaching. To participate in creative inquiry, the students must be able to express their own feelings and ideas. For the students to do this the teacher should provide an environment which encourages them to participate freely with limited directions. Inquiry teaching requires that a teacher asks questions by making use of ideas expressed by the students as opposed to drill patterns where the teacher dominates the lesson by interrupting her lecture with shallow questions to check whether facts have been understood.
Inquiry type of questions involve the use of category 3 and 9 as reflected in the teachers from the girls’ and mixed schools. It was noted that 1,2,3 and 9 were generally not utilised well by the teachers in boys’ schools.

For the data analysis and interpretation, the researcher noted that the average total frequency at category 6 (directions) for the Home Science teachers in boys’ schools was quite high as compared to that of girls’ and mixed schools. This indicated that the teachers were fully in control of the learning process, that is, the teachers expected compliance from the students all the time, as they told them what to do, how to do and when to do. While it is acceptable that directions are essential in teaching, excessive directions are likely to inhibit the students’ creativity in learning.

Teachers in boys’ schools also used more of category 7 (criticism) as compared to teachers in girls’ and mixed schools, and this demotivated the students. This is because excessive criticism is detrimental to any form of learning. The excessive use of category 6 and 7 may even discourage the students (boys) from selecting the subject at the next class level.

Therefore, the teachers in boys’ schools should try to use less of category 6 and 7. Instead, they should try and replace them with category 1,2 and 3, which will motivate students and probably encourage them to select the subject at the next class level, rather than drop it. These teachers should also note that, in the classroom, they should not only be concerned with ideas or the content
material coverage as some students may inhibit the learning process, if their emotional aspects are not considered.

Teaching demands that students be trained to be creative at their own individual level of learning, if learning is to be enjoyed by all in the class. This is important because, a student deems a subject as dull or interesting depending on whether, he/she can successfully understand and participate in it. It is the teacher’s obligation, therefore, to help the student develop a positive attitude towards that particular subject. To succeed, the teacher should try to create situations which encourage the student to discover and be creative. The teacher should try to stimulate students initiations by accepting their ideas, feelings and reinforcing their efforts.

The teachers in boys’ schools proved to be autocratic, while those in girls’ and mixed schools proved to be democratic, that is, they offered students a chance to participate freely in the classroom discussion. Therefore, teachers in girls’ and mixed schools promoted creativity, while those in boys’ schools inhibited creativity in students by not providing them with the opportunity to participate freely in the learning process.

The purpose of this chapter was to analyse, interpret and discuss the data collected in the previous chapter. The research objectives and questions are answered in the next chapter, together with conclusions and recommendations.
CHAPTER FIVE
CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

In this chapter, conclusions are made in accordance with the research questions and objectives set in chapter one. Implications from the results of the study and recommendations for future implementation and research in education are also made.

5.1 CONCLUSIONS

The purpose of this study was to determine the variation of verbal classroom interaction patterns among Home Science teachers and their students in girls’ boys’ and mixed secondary schools in Nairobi Province.

The researcher assumed that there is variation in teaching behaviour patterns of teachers in girls’, boys’ and mixed schools. However, whether the variation depends on the type of schools, was yet to be established. In order to achieve the objectives of the study, emphasis was placed on the following aspects:

- The types of teacher-pupil interaction patterns existing in the Home Science classrooms.
- The classroom climate that is predominant as a result of teacher’s’ verbal behaviour patterns.
To determine which of the teacher's verbal behaviour patterns elicit the most responses from the students.

The differences in verbal interaction, patterns as displaced by teachers and their students in girls', boys' and mixed classrooms.

The results from the data analysis and interpretation were used to realize the objectives of this study and also to answer the research questions cited for this study.

The teacher-pupil interaction patterns existing in the Home Science classrooms were of two types. Type one was prevalent in boys' classrooms, whereby the teacher did most of the talking, directed, criticized students and used drill method of teaching. The teacher was the active agent while the students were passive. There was very little students' participation in the lesson and most of the time the students just listened and obeyed teachers' orders. This gave rise to autocratic classroom climate. The teachers dominated the lesson and limited the opportunity for students to participate freely in the classroom talk.

The type two of teacher-pupil interaction patterns was that of mutual consideration and this was found in girls' and mixed secondary schools. These were teachers who accepted students' feelings, reinforced and accepted students ideas. Teachers in girls' schools gave more opportunity to students to participate freely in the classroom discussion. This gave rise to democratic classroom climate, whereby the teachers gave ample time to students to express
themselves. The students in girls’ schools were given the opportunity to initiate talk, which was complemented by the teacher accepting their ideas.

It was discovered that there was very little difference between the verbal interaction patterns in girls’ schools and that of mixed schools. This was attributed to the fact that there were very few boys in the mixed classrooms, hence making the girls the dominant gender.

It was also discovered that the use of categories 1, 2, 3 and 4 elicited the most responses from the students, unlike the use of categories 6 and 7 which discouraged students’ participation.

5.2 IMPLICATIONS

On the basis of the findings which have been made from the data analysis and interpretations, several outcomes are suggested.

1. It was noted that there was a marked use of lecture (expository) in all the classes/schools. This should be integrated with demonstrations to create heuristic or student-centred approach in order to promote the learning process.

2. The teachers in girls’ and mixed schools displayed teaching behaviour patterns which provided the students with the freedom to express themselves freely while those of boys’ schools displayed teaching behaviour patterns which limited the students’ freedom to express
themselves. Therefore, the teachers in girls’ and mixed schools can be said to have been democratic.

3. Teachers in boys’ schools employed excessive directions and control of the learning activities. As a result, the students were noted to participate in the lessons mainly in response to teachers’ questions and directions. It can be said that teachers’ direct teaching behaviour patterns limited students’ responses, thus denying students a chance to be creatively involved in the learning process. The teachers in boys’ schools exhibited autocratic behaviour.

4. The significant difference in the teaching behaviour patterns of teachers in boys’, girls’ and mixed schools suggest that the teachers view the students differently. This could be attributed to the general attitude held by people that Home Science is a subject for women. A change of attitude on the part of the teachers could improve the verbal interaction patterns in boys’ classrooms.

5. Improvement on the type of teacher-pupil interaction patterns existing in the classrooms can go a long way in improving the learning process. This can foster positive attitude and motivation which will lead to improved academic performance especially in the boys’ schools. The students will be encouraged to participate more in classroom talk, when the teacher creates a democratic classroom climate. Elements of making a classroom more democratic are by making the students aware of the tasks to be done beforehand so that they can get ready on time. Some students could be given opportunity to plan for action. There
should be democratic implementation of ideas. The teachers should try to provide dynamic feedback to the students whenever necessary.

6. Teachers are responsible for the teacher-pupil interaction patterns. The teachers in boys’ schools limited the opportunity for the students to participate freely in the classroom discussion. The students on the other hand were passive listeners and the lessons were mainly characterized by one-way talk from the teacher to the students. In girls’ schools, the teachers provided the students with opportunity to involve themselves actively in the learning process and the classroom interchange was two-way. Therefore, the teachers in boys’ schools could be made aware of the need to change their approach to teaching the subject, as this in effect determined the effectiveness of the teaching and learning process.

7. It was also noted that class-size affected the teacher-pupil interaction patterns. Some classes were rather too large and the teachers were therefore, unable to pay attention to all the pupils. This becomes an even bigger problem during practical lessons. Authorities concerned should try and find a solution to this problem.

8. All the teachers who were observed were female. This could also be attributed to the general attitude held by people that Home Science is a subject for women. Having some men teaching the subject may go a long way in improving the subject. This is because, it may not only alter the attitudes of the teachers towards the subject, but also of the students (especially the boys) who will be more willing to select the subject.
9. It was also noted that some of the teachers did not make use of practicals which are central in the teaching of Home Science. This may discourage students from selecting the subject at the next level, since they have been learning a practical subject theoretically.

5.3 RECOMMENDATIONS

From the data analysis and interpretations, the researcher came up with certain recommendations. However, these recommendations are not conclusive and therefore, there is room for further research which would help to make the teaching and learning of Home Science more effective and successful. The following are recommendations that the researcher came up with:

1. To improve the quality of teaching of Home Science, the Kenya Institute of Education should organize seminars and short in-service courses for teachers that should be practical in approach. Participating teachers should have a chance to practice selected teaching skills and the personnel conducting the courses should be people capable of making objective records (preferably using an observation schedule) to enable them to give reliable feedback on the basis of which teachers may improve their skills. The in-service should be organized in a manner that participating teachers should be taught various teaching skills like heuristic and discovery methods. The courses should be targeted at creating awareness amongst teachers as students learn best when they are involved. Preferably, these courses should be organized during the holidays in order to give all teachers a chance to attend.
2. The in-service courses should stress the importance of integrative behaviour patterns which motivate the students to learn more and also enhance the learning process as compared to diminutive behaviour patterns which discourage the students from involving themselves actively in the learning process.

3. The courses should foster teaching methods that stimulate self-initiation as students participate in class activities. This can be achieved by providing opportunities to students to express themselves freely.

4. The courses should emphasize that students deserve respect whenever they express their opinions or ideas, whether right or wrong. Therefore, teachers should react positively to students' ideas during classroom instruction.

5. It should also be stressed that teacher domination of class activities means that students play a passive role, thus the students creativity is hampered.

6. Classroom interaction analysis should be taught at the undergraduate level, rather than the post-graduate level. This will enable the newly posted teachers or those on teaching practice to be aware of what is expected of them in the classrooms.

7. The number of pupils per practical class needs to be reduced. Principals/Headteachers could solve this problem by either allocating two teachers per class during practical lessons or dividing the classes into smaller groups.
8. Lecturers/tutors in the universities/colleges should encourage male graduate teachers/trainees to teach Home Science after the training. This will be a way of encouraging the boys who might harbour negative attitudes towards the subject.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

1. A study similar to this one, taking care of a larger sample is recommended.

2. The fact that this research was conducted in an urban setting, a comparative study may be carried out between urban and rural schools.

3. A similar study which will incorporate other aspects of teaching behaviour patterns (for example, the non-verbal behaviour) is recommended.
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APPENDIX I
A MODIFICATION OF FLANDERS CATEGORIES FOR
INTERACTION ANALYSIS

1. Accepts Feeling
   This refers to teacher’s statements, which clarify the feeling tone of the
   students in a non-threatening manner. Such feelings may be positive or
   negative. Predicting and recalling feelings are included.

2. Positive Feedback
   Refers to teacher’s statements, which praise or encourage students’ action
   or behaviour. It also includes behaviours like nodding the head or saying
   “uh huh?” or “go on”.

3. Accepts or uses ideas of students
   This refers to teacher’s statements which accept or use ideas of students.
   These include clarifying, building or developing ideas or suggestions by the
   teacher.

4. Asks Questions
   Refers to teacher’s questions which serve to move the conversation to the
   next step to introduce a new problem, element and to involve ideas which
   the teachers think are important.

5. Lecturing
   This involves giving facts or opinions about content or procedure. It is in
   this category that the teacher expresses his/her own ideas and asks
   questions.
The category is in three parts as follows:

a) Lecture involving only talk by the teacher, without any aids to enhance the points.

b) Lecture with illustrations or aids. The lecture here combines use of charts, flash cards, real objects and chalkboard.

c) Lectures with demonstrations where the teacher performs an experiment or a practical to enhance a part of the lesson.

6. **Giving Directions**

   This refers to statements of the teacher, like directions, commands, or orders with which a student is expected to comply.

7. **Criticizes or Justifies Authority**

   This includes any statement intended to change students' behaviour from non-acceptable pattern to acceptable. Statements stating why the teacher is doing what he is doing and those indicating extreme self-reference are classified under this category.

8. **Student Response**

   Refers to statements of students in response to teachers. The teacher here initiates the contact or solicits student statements and sets limits to what the student says.

9. **Student Initiate**

   Statements of own initiated type by student are classified here. Unpredictable statements in response to teacher also fit here.
10. **Silence or confusion**

Refers to pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer. More than one student’s response to the teacher’s questions is coded here. However, response by more than one student when clearly and intentionally directed by teacher is not coded here.
### APPENDIX II

**SYSTEMATIC OBSERVATION SHEET**

Teacher's Name:  
Date:  
Time:  
Form:  
Topic:  

- Gender:  
- Class Size:
APPENDIX III

LIST OF PUBLIC SCHOOLS THAT OFFER HOME SCIENCE IN NAIROBI PROVINCE

GIRLS SCHOOLS

1. Kenya High
2. Parklands Arya Hirls High School
3. Huruma Girls’ Secondary School
4. Muslim Girls’ School Nairobi
5. Moi Girls’ School Nairobi
6. Ngara Girls’ High School
7. Our Lady of Mercy Secondary School Nairobi
8. Pangani Girls’ School
10. State House Girls’ High School
13. St. George’s Secondary School

BOYS’ SCHOOLS

1. Moi Forces Academy
2. Parklands Secondary School
3. Ofafa Jericho High School

MIXED SCHOOLS

1. The Aga Khan High School
2. Mutuini High School
3. Lang’ata High School
4. Kangemi High School
5. Kamiti Secondary School
6. Hospital Hill Secondary School
7. Nile Road Secondary School
8. Nembu High School
9. **Ruaraka Secondary School**
10. Our Lady of Fatima Secondary School
11. Uhuru Secondary School
12. Kayole Secondary School
13. Kamukunji Secondary School

*Note:* All the schools in **Bold** are the schools that were selected for the main Study.
OFFICE OF THE PRESIDENT

PERSONNEL DIVISION
P.O. Box 30510
NAIROBI

29th October 1998

Dear Madam,

RESEARCH AUTHORIZATION

Following your application for authority to conduct research on "Verbal Interaction on Patterns of Selected Secondary School Homescience Teachers in Nairobi Province, I am pleased to let you know that your application has been considered and approved.

Accordingly you are authorised to conduct research in Nairobi as from 29th October 1998 to 30th November, 1999. You are advised to pay a courtesy call on the Provincial Commissioner, Nairobi before embarking on your research project.

This office expects to receive two-bound copies of your final research findings upon completion of your research project.

Yours faithfully,

[Signature]

A. G. KAARIA
for: PERMANENT SECRETARY/
PROVINCIAL ADMINISTRATION

cc.

Provincial Commissioner
APPENDIX V

MINISTRY OF EDUCATION AND HUMAN RESOURCE DEVELOPMENT

PROVINCIAL DIRECTOR OF EDUCATION
NAIROBI PROVINCE
NYAYO HOUSE
P.O. Box 74629
NAIROBI
......1st December, ........., 1998

Principal/Headteacher,
Nairobi Secondary Schools

RESEARCH AUTHORIZATION

JUDITH NYAMBURA NJUGUNA : KENYATTA UNIVERSITY

The above named student has been authorised by the Office of the President to conduct research on "Verbal Interaction Patterns of selected Secondary school Home Science Teachers in Nairobi Province from 29th October 1998 to 30th November, 1999.

Please give her the assistance she needs.

L.M. MUCHIRA (MRS)
FOR: PROVINCIAL DIRECTOR OF EDUCATION, NAIROBI

KENYATTA UNIVERSITY LIBRARY