MEASUREMENT OF THE PROCESS AND EXTENT OF CURRICULUM IMPLEMENTATION IN SOCIAL STUDIES:

An Example from Mauritius

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ABSTRACT

This work is an account of an empirical study of a currently important topic - the evaluation of curriculum implementation. It is intended to measure the degree of implementation of a Social Studies curriculum innovation project in Mauritius according to certain criteria which have been shown in other research to be associated with successful implementation evaluation. That is its first aim.

However, the present investigation sees the problem of implementation evaluation as being concerned with more than a degree of implementation or fidelity perspective. It is also helpful and important to know the types of classroom interaction and the changes that occur to the innovation during the implementation process. This constitutes the second aim of this study.

Finally, the third aim is to examine the patterns of influences on the implementation process over a period of five to six years, and to consider whether different patterns affect initial and later implementation phases.

This implementation study makes use of a variety of research instruments to find out how they compare with each other. It involves the participation of the census population of Form III Social Studies teachers for a questionnaire survey; it also makes use of multi-stage sampling in the selection of 80 teachers for classroom observation, 20 teachers for formal interviews, some 1 900 pupils in their third year of secondary school for a questionnaire survey, and some 1 600 such pupils for a standardized test. The data are fully analysed in various ways, using both parametric and non-parametric statistical techniques.

The results of the present study reconfirm the common observation made by previous studies, namely that a variety of variables influence the degree of implementation of an innovation, and among them, teacher qualification is of critical import. Trained teachers are generally more effective implementers than untrained ones. However, this investigation has specified exactly how teachers differ in their level of implementation.

Three levels of implementation have been identified by a factor analysis of classroom observation data and they are defined in terms of the teaching behaviours exhibited by the implementers. Significant relationships are found between the levels of implementation and pupils' perceptions of their teachers' classroom strategy, with chi-square and F values significant at $P < .001$. The effects of levels of implementation on pupils' achievement also show statistical significance, with F values significant at $P < .0001$. Multiple R values of .40 to .48 confirm the relationship between teachers' level of implementation and pupils' performance, while contrasts in the mean scores of pupils belonging to the three different levels of implementers are reflected in T values obtained at the $P < .0001$ significance level.

The analysis of the implementation process indicates that qualified and trained teachers (who are significantly associated with high implementers at the .05 level) perform more effectively in the classroom than untrained teachers. The qualification effects were significant in three categories of the Flanders Interaction Analysis system (Teacher response at the .05 level, teacher lecture at the .01 level and pupil initiation at the .001 level) and in the case of eleven out of twelve items of the Evans/Behrman Schedule (six of them at the .001 level). These teachers also adapt the innovation more systematically and successfully than the other groups of implementers, particularly the low group.

Finally, the analysis of the patterns of influences on the implementation process at two different points in time indicate that problems relating to structural changes are likely to continue over time, whereas factors which are under teachers' control are not as serious as they are initially. It is also found that an innovation evolves in line with the politics of the times.

This work is original and has not been previously submitted in support of a degree, qualification or other course.

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THE RESEARCH PROBLEM AND ITS BACKGROUND

Introduction

> *"The formulation of a problem is often more essential than its solution ... To raise new questions, new possibilities, to regard old questions from a new angle, requires imagination and marks real advance in science".*
>
> Einstein (1947)[1]

The problem of curriculum implementation has been lately the subject of considerable concern. Many of the knowledge needs of curriculum implementation have been investigated by researchers and anyone conducting an inquiry in this field tends to despair of being able to contribute something that has not already been written. However, this does not mean that all the basic research requirements of curriculum implementation have been met. There are certain areas of needed research in this field.

For instance, in current thinking on implementation evaluation, much stress is being laid on the need to identify levels of use of new programmes. This study will try to identify levels of implementation operating within a curriculum innovation project in Mauritius. This definition of levels of implementation will depend entirely on an analysis of teacher-pupil interactions and of implementation of the

main features of the new curriculum in the classroom. Such an analysis will require observation of teachers to describe and classify how they operate; it will not be derived from interviews as was the case with recent research in the levels of use (Hall & Loucks, 1977)[2].

This present investigation will also try to establish links between these levels of implementation and pupils' perception of classroom strategy and pupils' achievement. Very few studies on the prediction of pupil achievement from teacher variables have, in fact, used levels of implementation to arrive at some correlate of pupil achievement across the main areas of teaching objectives.

Another area of research needed in the field of implementation evaluation is to consider pupils as autonomous participants in the implementation of a new curriculum, entitled to their own interpretation and views. Most of the research conducted to-date in implementation evaluation has focused almost exclusively on teachers as important sources of information. The complementary problem of pupils' experience with the implementation of the new programme has been relatively neglected. With the growing realization that the gap between teachers' intention and practice can be a significant factor inhibiting implementation, pupils' perceptions of their teachers' classroom strategy and of their priorities of teaching objectives can be quite revealing.

Finally it would be interesting to consider how an innovation context can be susceptible to change over time. During the course of implementation, a variety of variables interact to change the

form of the innovation as well as those using it. Evidence from previous studies on the evolutionary character of an innovation is sparse.

Outline of this Study

The preceding introduction may help to explain the nature of this study and to delimit the problem under investigation. This chapter consists of a review of previous research in curriculum implementation. The empirical findings arising from this review are brought together at the end of this chapter to formulate the research problem and questions of this inquiry.

In Chapter II, the research design and methodology are described. Chapters III, IV, V, VI and VII each present separate aspects of the results of the data-analyses. Chapter VIII consists of a general summary of the main findings, and a brief discussion of their implications for educational practice. Because the presentation of the results tends to be detailed and lengthy, there is a short summary of the results obtained from each instrument used at the end of chapters III to VII respectively. These results are brought together and summarized in the final chapter.

As far as is practicable, the main text is kept as non-technical as possible; all statistical technicalities are referred to appendices.

PREVIOUS RESEARCH INTO CURRICULUM IMPLEMENTATION

There has been lately a considerable number of investigations into what has been called curriculum implementation; the problem of this review has been to survey this substantial literature meaningfully within a limited compass. Of course, some selection of these studies is inevitable and also essential in a review of this kind if it is to be precise and less confusing. Some of the reported studies on implementation have been concerned with particular case studies of the implementation of specific innovation projects. While these case studies have, no doubt, provided a valuable source for extending knowledge about implementation, they cannot be considered here for practical reasons. However, brief references will be made to some of them which are relevant to this study.

The following review will be divided into three major sections. First, the main investigations into the conceptualization of implementation will be considered. Second, there are several studies related to the determinants of implementation which explain failure or success in curriculum reform. Finally, there are investigations into the measurements of implementation.

The Conceptualization of Implementation

> *"Most change in the change literature is largely cosmetic. The more the change literature grows, the more it remains the same,"*
>
> Parker (1980)[3]

Implementation is a fundamental concept which is frequently referred to in relation to the process of change. It is one of the stages of curriculum innovation upon which most emphasis has been put

since the 1970's. The importance of this term has become readily evident as the movement of curriculum development at the national level gained prominence, and also as there was a growing realization that the intentions of curriculum developers have been rarely realized in the classroom to any significant degree.

In order to understand the phenomenon of implementation more clearly, one must first try to understand the complex and varied course of conceptualizing the process of educational change, and therefore, a brief historical perspective will be attempted here. Prior to 1970, it was assumed that the problem of effecting change was one of bringing about adoption. It was felt that the advantages of an innovation could become obvious to individual adopters if only they were aware of it and would try it. This *"technological perspective"* of innovation (House 1979)[4] separated the process of innovation into functions and components.

The dominant view about educational change at that time was the research, development, diffusion paradigm (R, D & D). One of its versions was conceptualized as the Diffusion and Adoption model or the linear model of change by Clark and Guba[5] who recognized four main stages in the change process: research, development, diffusion and adoption. The remaining stages including implementation did not receive much concern. This model also assumed the involvement of an outside change agent in bringing about change in the school system.

Shortcomings in much of this literature on the Diffusion and Adoption model were identified by many authorities in the early 1970's. Thus Gross et al (1971)[6] indicate that adoption is only just the beginning and does not guarantee implementation.

Many of the writers in the 1970's began examining the problem of implementing change in relation to the political, economic and organizational realities, limitations and capabilities. This second perspective of innovation can be said to correspond to House's *"Political Perspective"*[7]. Authors like Gross et al (1971), Bennis et al (1976)[8], and Havelock et al (1973)[9] stressed the importance of the planning process in effecting change and within the planning process, the implementation stage received most attention. The R, D & D paradigm was extended into Havelock's linking model in which links between outside developers or researchers and teachers were fused. Such links were considered essential for securing resources. Macdonald and Walker's notion of *"curriculum negotiation"*[10] which reflected the need to bridge the gap between the developer and the practitioner, no doubt illustrated the political perspective of innovation. Other studies conducted from a similar viewpoint include that of Becher and Maclure (1978)[11] and that of Kogan (1978)[12]. Becher and Maclure made this point very clearly when they wrote:

> *"The politicization of the curriculum debate is a direct reflection of the politicization of other aspects of social policy. There is no way of insulating education against this, even were it desirable to do so".*

Against this background of the development of prescriptions for implementing change there emerged another perspective, namely an anthropological or a holistic approach to studying the process of change in the late 1970's. This approach suggested analyzing the characteristics of the situation or the cultural milieu and designing an implementation process to meet the unique characteristics of that

particular situation. In this conception, there was no outside change agent to bring about change in the school system. The teacher became a full participant in *"action-research"* in his own setting.

This action research as portrayed by J. Elliott et al (1979)[13] was an attempt to improve the change process by showing more concern for the cultural context. Each group or subculture is different from each other according to this *"cultural perspective"* (House 1979), and therefore the implementation of innovation or action must be approached cautiously. A similar stance is to be seen in the writings of Reynolds and Skilbeck (1976)[14] who stress the need for a *"situational analysis"* approach in curriculum development.

It is thus obvious that three perspectives or paradigms have dominated the studies on the process of innovation over the past decade or so namely (i) the Diffusion and Adoption paradigm or the technological perspective

(ii) the political perspective and

(iii) the anthropological or cultural perspective.

The implementation stage in the process of innovation began to receive most attention in the last two perspectives. It is interesting to note that all three perspectives of innovation will survive alongside each other, not only *"in subdued forms but in young and virulent forms"* (House).

Fullan and Pomfret (1977)[15] who were key authors in stressing implementation in the late 1970's define the term as

> *"the actual use of innovation ... implementation is not simply an extension of planning and adoption process. It is a phenomenon in its own right".*

This definition clarifies the stage of implementation as the time when an innovation is actually put into practice. In fact, real implementation begins when a set of new practices or a curriculum innovation exists and is made available to the target population of teachers and students. The following definition of implementation as proposed by R. Kempa (1979)[16] has the added advantage of directing the attention on teaching and learning transaction:

> *"Implementation is the sum total of the processes and interactions whereby curricular intentions are transformed into teaching and learning transactions".*

Once the innovation is in the classroom, the implication is that the users are expected to put the already-created curriculum into operation as fully as possible. This viewpoint can be said to reflect particularly the stand taken by the Diffusion and Adoption model. To quote D. Gleeson (1979)[17] here

> *"The normative model of curriculum development inevitably oversimplifies the problem of implementation ... it is a misconception that schools do automatically adopt or passively respond to the engineered input of knowledge, even in circumstances where teachers support the general aims of curriculum projects ..."*

Those who have stressed the importance of the planning process or of *"advocacy groups"* in effecting change would argue like Bennis[18] that

> *"implementation is a process which includes the creation of understanding and commitment toward a particular change, and devices whereby it can become integral to the client system's operation".*

A similar view is taken up by Waring (1979)[19] when she writes thus:

> *"successful realization in the classroom of the approach and content advocated by a Project constitutes implementation".*

There is thus a tendency to assume that the intentions of the curriculum developer would be translated into actions in the classroom, thereby reflecting these intentions as faithfully as possible.

This assumption, however, has been questioned by various researchers. Thus Fullan and Pomfret (1977) point out the need to conceptualize implementation in two ways:

> (a) *"the degree to which the innovation is implemented as planned: thus fidelity with developers or sponsors' conceptions of the innovation is the main criterion.*
>
> (b) *The degree to which the innovation is a product of a mutual adaptation between developers' and users' conceptions during the planning, adoption and especially the implementation process".*

Although the second definition is desirable the authors themselves, however, doubt that this is the sense in which it is normally used. *"Implementation under such conditions is an agreement reached covertly to implement innovation"*. There is an implication here of *"linear, centrally directed consensus assumption"* about how change should occur.

Latest findings from empirical research carried out in the field of implementation would seem to indicate that these two ways of conceptualizing implementation as suggested by Fullan and Pomfret should not be seen as two different perspectives altogether but in fact, as complementary stages in the course of implementation. This is, for instance, reflected in these words of Bruckheimer (1979)[20].

> *"Implementation should not be conceived as a relatively static process of implementing the already created, but a dynamic process in which the products of the first curriculum development stage are the basic data, but they can be manipulated, added to and adapted"*.

The mutual adaption format or *"partisan mutual adaptation"* (Mann 1976)[21] has come to be recognised as a better option than the fidelity perspective and following the latter in the process of innovation. Mc Laughlin (1976)[22] argues that mutual adaptation is *how* projects were to be implemented if they were to be implemented at all. However, she also makes it clear that this fact cannot be reflected in the Project's design since *"project implementers cannot know what it is they need to know until project operations are well underway"*.

Mc Laughlin further makes the fundamental point that the demands of implementation itself dominate the innovative process regardless of the intentions of the developer. She describes the process in three ways:

(i) Mutual adaptations in which the project and the site shape each other.

(ii) Co-optation when the site captures the project but remain unchanged by it.

(iii) Non-implementation when the project is ignored by the site.

The term *"mutual adaptation"* has come to mean varying degrees of change to different writers. To some (e.g. Mann 1976)

> *"the impact of mutual adaptation tends to push project techniques and goals away from their original conceptualization ... the original configuration of projects should take account of their eventual mutual adaptation fate".*

A similar stance is taken by Pitman (1981)[23] when he talks about the *"necessary distortion"* of innovation during the chain of negotiations from developer to mediator, to teacher and finally to students. Pitman who has proposed an extension of Macdonald and Walker's negotiation model, relates the problem-solving processes of conciliation and swamping to adaptation, particularly to those aspects of adaptation, particularly to those aspects of adaptation which tend to be disparate to the aspirations of developers. To others (e.g. Waring 1979) adaptation means modification of the project's

ideas and intentions, but not their distortion to such an extent that they would be recognised:

> *"If distortion has occurred or if what happens in a classroom would be virtually unrecognizable to the developer, then the advocated change has neither diffused nor been implemented, and it is preferable to use the term 'adoption' ... adaptations which put into practice the basic framework and approach constitute successful diffusion and implementation".*

Discussing the concept of mutual adaptation and development process, P. Dalin (1978)[24] writes:

> *"often it implies that certain aspects of an innovation are adopted and implemented while other parts are omitted".*

According to Berman and Mc Laughlin (1976)[25] mutual adaptation could involve a variety of adjustments, ranging from modification of Project goals, amendments of Project treatment, revision of expectations for behavioural change in the staff to unanticipated changes in standard practice. In other words to some, mutual adaptation means the decay of the original project, the point of *"drastic mutation"* (Hall & Loucks, 1978)[26] while to others, it means simply the modifications of the project's ideas while retaining its basic framework. The latter definition is more relevant to this study insofar as it implies dialogue between the schools and the central administrative unit in charge of the innovation and compromise rather than conflict.

In their 1977 reviews of research on implementation, Fullan and Pomfret add a third perspective to the way of conceptualizing implementation, namely the process perspective. This perspective focuses on the implementation process itself in widely different settings and stresses the dynamic role relationship in the classroom, the continuous development of the innovation, the users' understanding and valuing of the components of the innovation.

Following House's argument,[27] these three perspectives of implementation studies as suggested by Fullan and Pomfret can be made to relate to the three paradigms of the innovation process previously considered, thus:

Perspective on Innovation	*Perspective on Implementation Studies*
(i) Diffusion and Adoption model (technological Perspective)	Fidelity Studies
(ii) Political Perspective	Mutual Adaptation Studies
(iii) Cultural Perspective (Anthropological Approach)	Process Studies

In establishing the relationship between these three implementation studies and the three perspectives formulated by him, House is arguing that the same phenomenon can be studied differently from the three perspectives.

For instance, the technological perspective focuses on the innovation itself; the earliest version of this perspective assumed that there was considerable consensus among members regarding an innovation. One manifestation of the perspective is the R, D & D paradigm which assumes a rational sequence of activities and which prepares for the learning outcomes intended by the developers. It is true, however, that the more recent version of this perspective views conflict as the price of progress. Anyhow, from the technological perspective, the new input should lead to the intended output and therefore an innovation will be studied as to the degree of faithful implementation; hence the link between this perspective and the fidelity study of implementation.

The assumption underlying the political perspective is that value conflicts are bound to occur in the implementation of an innovation, but that a successful compromise can be achieved through bargaining or negotiation. Regardless of the intentions of developers, a new curriculum is adapted by teachers and schools as part of the educational system. Mutual adaptation is definitely a political concept; a mutual adaptation study will focus on how the teachers adapt the new curriculum to their own uses.

The cultural perspective stresses the importance of the context, of the social and cultural milieu of the classroom, school and community. This perspective assumes the existence of different social groups or sub-cultures. Although a particular group or sub-culture is seen as having consensus internally, misunderstandings among the sub-cultures are likely to exist. The study of an innovation in an unknown culture must take account of the unanticipated effects. This is precisely the focus of a process study of implementation.

Just as House argues that various combinations of the three basic perspectives are possible and have in fact occurred, so it is the assumption of this work that an implementation study can be made to combine the three orientations suggested by Fullan & Pomfret.

Considerations will be paid in this study to the fidelity of use of the innovation or the degree to which the original intentions of the project are followed. At the same time, considerations will be paid to the process of implementation, to the changes which have occurred to the innovation during the process and the extent to which the total system is responsive to the need for change. In other words, this study will combine the mutual adaptation and process perspectives as outlined by Fullan amd Pomfret. This study takes the view that mutual adaptation is, in fact, a type of interaction that characterises the process of implementation. A great deal of adaptation related to the diverse institutional settings, takes place during the process of implementation.

Similarly this study is set within a combined technological - political and cultural view of the curriculum. Following the technological perspective stress will be laid on the hardware of the new curriculum (the production of materials with specific objectives) and on the intended output. At the same time, the political and cultural viewpoints are also considered. It is recognised that the power structures of the socio-political system and the cultural patterns of the classrooms and beyond, are significant perspectives. In other words, the interactions that the new curriculum can have with the under socio-political and cultural features are taken into account.

The definitions advanced in this thesis are similar to other definitions considered during the review of research. Implementation will be attributed to the process whereby the innovation is put into practice. Every attempt will be made during the course of this study to maintain a consistent use of concepts as outlined above.

The Determinants of Implementation

> *"The enduring problem that has plagued the sponsors and planners of innovation is not the problem of creation, but the problem of impact, the failure to achieve anything like the mass conversion to new aims, new content and new approaches that they aspire to ..."*
>
> Macdonald & Walker (1976)[27]

Much work has been done investigating the variables influencing implementation, and their effects on the success or failure of implementation. The contributions of this research work are great, and their significance for theory and practice cannot be denied.

According to Connelly (1979)[28],

> *"the term implementation points to tools and methods, to the means and not to the ends. Psychologically the term carries unpleasant authoritarian overtones."*

He is suggesting in other words a plausible explanation as to why teachers often resist the efforts of implementers. Teachers may well go through the process of implementation but really take the innovation into their normal pedagogy without being affected by its innovatory character.

A great deal of the literature on the change process has referred to the barriers which minimized the degree of implementation. Early research tended to conceive of the problem as one of overcoming the *"initial resistance"* to change by well-planned strategies. Later research, however, has shown the limited value of the theory of resistance. Gross et al (1971) for instance, observed that the formulations of the theory of resistance appear to be *"too simplistic"* and overlook other forces at work in the social system.

Per Dalin (1978)[29] argues along a similar line; barriers to implementation can be phenomena other than *"resistance in personality"*. He mentions four major categories of barriers which have emerged from an analysis of case studies of educational change in several countries:

(i) Value barriers due to different ideologies and beliefs among individuals and groups.

(ii) Power barriers due to power redistribution in the system.

(iii) Practical barriers due, for instance, to ill-conceived projects or to mismanagement.

(iv) Psychological barriers.

Many barriers can, in fact, be traced back to relatively *"simple"* practical problems. Indeed, explanations for neglect of implementation have focused particularly on the application of change strategies, the characteristics of the innovation and the users. Thus, Gross et al concluded that the low explicitness of the innovation, teachers' lack of needed capabilities, the unavailability of required instructional materials, the incompatibility of organizational arrangements

with the innovation and the lack of staff motivation led to a minimal degree of implementation.

Waring (1979)[30] in her study of the Nuffield Foundation Science Teaching Project ascribes a series of inhibiting factors to educational change among which feature the complexity of interrelationships in the social environment, the diffuseness of educational goals, the complexity of communication patterns, the weight of tradition, and of vested interest. Two major constraining factors in her view are

> *"first the politics of educational change by whose means the content of education remains an instrument of social control ... and second, stabilizing tendencies in both central government and in individual classrooms as a result of conservation, institutional structures and inertia".*

Similar conclusions have been reached by other writers who have discussed the neglect of implementation. Thus Humble and Simons (1978)[31] mention such factors as the strain on the school system in terms of the challenging role relationship, and in service support for teachers. Hoyle (1974)[32] underlines the importance of teachers' commitment to avoid *"tissue rejection"*.

Leithwood and Russell (1973)[33] argue that implementation will not take place if future shock occurs first. They advance the view that teacher-initiated change may be more successful than the top-down approach; that more stress should be placed on information presentation strategies and that because of variations in teachers' cognitive structure, individualised approaches should be used.

Some writers like Kelly (1975)[34], Harding (1975)[35], Macdonald and Walker (1976)[36], Havelock and Havelock (1973)[37] have stressed the importance of communicating the innovative idea to its potential audience in appropriate ways.

Most of the explanations for barriers to implementation have stressed the inadequacy of the innovation and of the technologies of change. There is a greater need, however, to examine other forces at work. Broadly relevant to this study is the following point taken up by Mann (1976)[38]:

> *"The peculiar disadvantage of change agents in education lies in applying methods which are largely educational to situations which are fundamentally political".*

The concept of power as a major factor in curriculum development was also developed by Richards (1977)[39], Kogan (1978)[40], Dalin (1978)[41], Becher and Maclure (1978)[42], House (1974)[43] among others. Becher and Maclure point out that

> *"Teachers, parents, pupils, politicians, employers and post-secondary consumers of the product of the education system - each has an intent to defend, a susceptibility to be respected or ignored" (p. 166).*

Much has been learned about the factors that inhibit implementation but there is still a lack of productive theorising about the conditions that would facilitate the intended changes. It is true that the emergence of collaborative action-research as portrayed by Elliott et al in the Ford Teaching Project (1976) is one move towards the improvement of the implementation process. This classroom action research is based on a strategy whereby the researcher and teachers work as full partners in the research process. However, this type

of research has arisen mostly in U.K. and U.S.A. which do not have highly centralised systems of education.

S. Brown and D. Mc Intyre (1979)[44] who conducted an experiment in action-research in the context of the Scottish centralised educational system, reported inconclusive findings. The researchers, however, added that failure to implement innovation successfully through action-research does not in itself falsify either the principles or the way in which they were applied, since there are other factors which may have led to failure.

An interesting proposal for explaining successful implementation comes from Dalin (1078)[45]. He distinguishes between two criteria of success following two different types of change strategies, the top-down approach and the institution-based development. The process of innovation involves a combination of both strategies:

> *"successful implementation would mean the ability of the institution to be responsive to externally developed and/or directed innovations on the one hand, and at the same time the ability of the institution to develop a creative growth and improvement process".*

Such a proposal if it can be exploited and made to work properly in practice, may enhance considerably implementation in a centralised educational system.

The re-education of teachers has always been considered as a key variable for effective and continued implementation.
Mc Laughlin and Marsh (1976)[46] assert that *"successful change"* and *"Staff development"* were found to be essentially synonymous in the Rand Study.[47] The Rand Study moves away from the traditional view of

staff training in terms of in-service training courses or workshops. Instead it emphasizes learning for professionals as part of on-going programme building in an organizational context.

From this brief review, it is obvious that explanations for barriers or facilitators to implementation range beyond those mentioned in individual studies and are far more complex that those discussed in each. Fullan and Pomfret (1977)[48] have summarized research into the problems of implementation under certain broad categories. The categorization of factors constitute a coherent way of organizing all the major types of variables that affect implementation. It is worth quoting these authors' main conclusions:

> *"These factors do not constitute a theory of implementation, but they do represent a step in that direction ..."*

Fullan and Pomfret's categories of factors are as follows:

A. *Characteristics of the Innovation*

1. Explicitness
2. Complexity

B. *Strategies*

1. In-service training
2. Research support (time and materials)
3. Feedback mechanisms.
4. Participation.

C. *Characteristics of the adopting unit*

1. Adoption process.
2. Organization climate.
3. Environmental support.
4. Demographic factors.

D. *Characteristics of macro socio-political units*

1. Design question.
2. Incentive systems.
3. Evaluation.
4. Political complexity.

The role of these specific factors, argue the authors may vary according to the nature of the innovation project and according to the way that implementation is conceptualised. Some of these variables are likely to be more critical under one set of conditions while others may predominate under other conditions.

There is a strong correlation between Fullan and Pomfret's categories and those of Berman and Mc Laughlin[49]. The latter hypothesize three general factors with their key components which can be listed thus:

A. *Project characteristics*

1. Educational treatment or technology.
2. Resource level.
3. Scope of proposed change.
4. Implementation strategy.

B. Institutional setting

1. Organizational climate and motivations of administration/ staff.
2. Characteristics of school, district and principal actors.

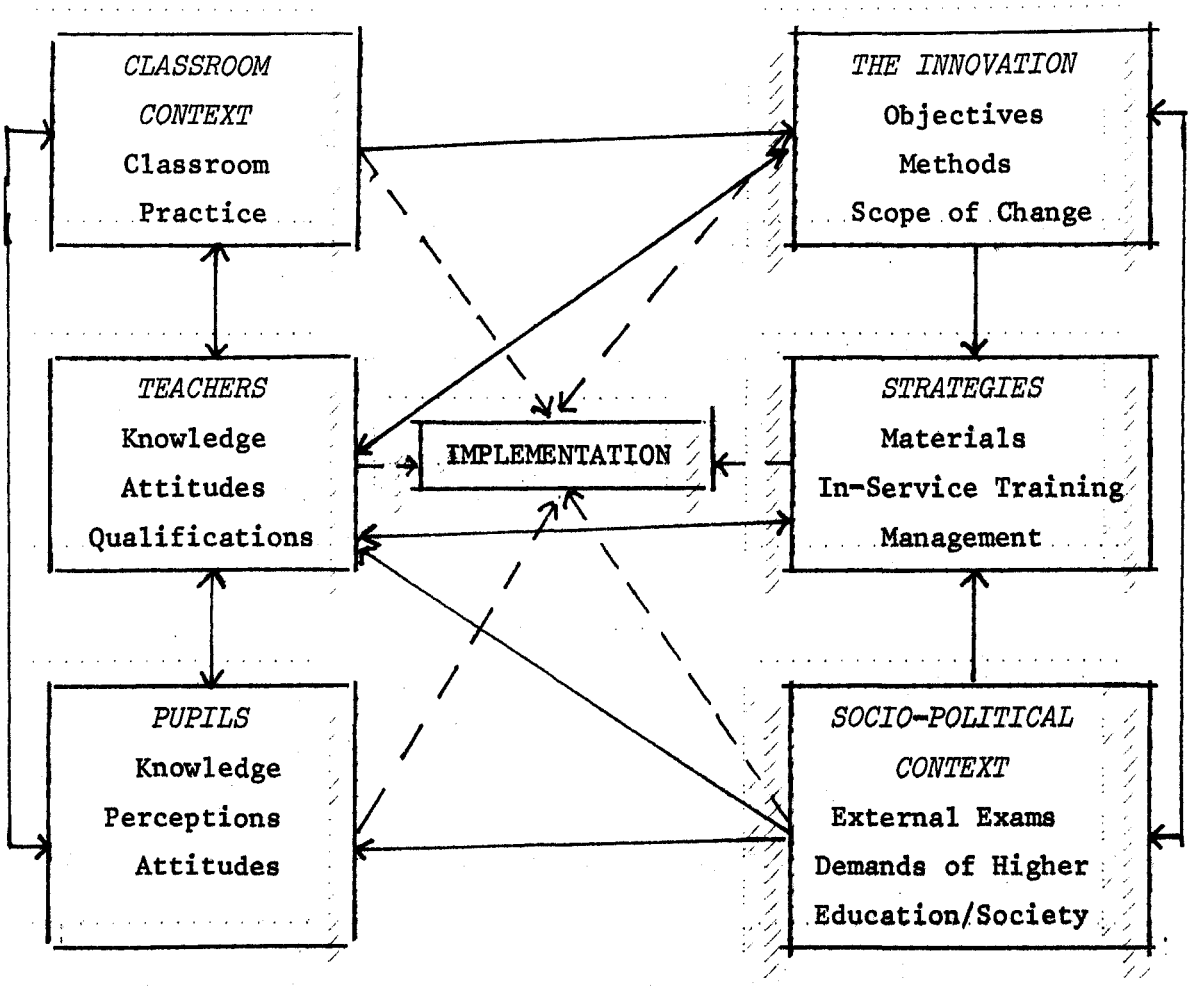
C. Federal policies

Change agent programme objectives and management strategies.

It is interesting to note that Berman and Mc Laughlin have categorized implementation strategy as a component under Project characteristics, whereas to Fullan and Pomfret, strategies constitute a factor by themselves, separate from the characteristics of the innovation.

The diagram on the next page tries to summarize the major determinants of implementation which would seem to be more significant in the context of innovation prevailing in Mauritius and which will be examined in this study. It helps to illustrate some of the main influences by which curriculum implementation is helped or hindered. Given the six determinants of implementation, it is useful to illustrate possible relationships between these determinants. For this purpose, a path diagram is drawn to indicate the interactions between these variables.

Figure I: Determinants of implementation in the Mauritian context



Conventions: (a) Letters in the boxes represent the main elements in each determinant.

(b) Arrows in dashes indicate determinants of implementation.

(c) Line arrows indicate interactions between determinants.

Evaluation of Curriculum Implementation

It is not easy to draw a line between curriculum evaluation and the evaluation of curriculum implementations; however, there are certain issues which are specific to the evaluation of implementation. To determine the impact of change upon the user system Fullan and Pomfret (1977)[50] suggest the atomization of implementation into five components or dimensions namely

(a) subject-matter or materials.

(b) organizational structure.

(c) role/behaviour.

(d) knowledge and understanding.

(e) value internalization.

They further suggest that problems of measurement should be related to these five conceptual dimensions. Thus, while dimensions (a), (b), (c) above can be assessed by direct observation, dimensions (d) and (e) can be determined through the use of questionnaires.

A number of different techniques have been used to assess the degree or the process of implementation. However, it is generally accepted by researchers that direct classroom observation over an extended period is the most valid technique of assessing the degree of implementation. Gross et al (1971)[51], Eggleston et al (1974)[52] and D. Alexander (1974)[53] are good examples of the use of direct observation as a technique of assessment.

Gross et al (1971) used a standardized classroom observation instrument to measure the degree of implementation. It was a five-

point scale ranging from *"not at all"* to *"completely"* on each of twelve behavioural criteria that were used to reflect whether teachers were changing their role. The frequency with which the new role was attempted was recorded by the observers. The reliability of this instrument could not be established through inter-observer agreement, since the same fieldworker carried out the three observations per classroom.

Eggleston et al (1975) produced the first systematic observation schedule to be developed by British evaluators of curriculum innovation projects. In devising their Science Teaching Observation Schedule (STOS) using interaction analysis, the authors claimed that they could make sense of observed data through this means. They considered their approach a *"process-product"* type study in the sense that not only they could comment on processes in the classroom context, but they could also comment on the learning outcomes of the students. Their primary concern in the use of this schedule was to identify teaching styles which could play a part in determining how the project was implemented.

Alexander (1974) also took the view that if observation is to be used as an evaluation technique, it must be systematic and structured. Although Flanders Interaction Analysis was found *"stimulating and interesting"*, it was not considered appropriate on practical grounds. Instead the project members devised their own schedule which listed twelve activities most likely to take place during the implementation of the secondary science material. These activities were grouped under three broad areas:

(a) Discussion.

(b) Experiment.

(c) Recording.

Numbers I to V were added to the schedule to indicate level of pupil participation. There was no detailed statement of intent and furthermore the author agreed that there was no rigorous test of that instrument. One wonders, therefore, about the extent to which this instrument could be said to be a valuable analytic tool. Moreover, although a teacher questionnaire and a pupil poll opinion were also used, no relationship was reported among all three instruments.

Another study which made extensive use of systematic observation for collecting classroom data is the Observational Research and Classroom Learning Evaluation (ORACLE) Project by Galton, Simon and Croll (1980)[54]. This study is an extension of the work by Eggleston and Galton (1975) and although it derives from work on science education, it is a refreshing contribution to the literature on classroom observation.

The ORACLE Study stressed the need to use systematic observation rather than questionnaires to study the processes of teaching and learning. It made use of two observation instruments, the Teacher Record and the Pupil Record. The data from these two instruments were supplemented by *"descriptive accounts"* of both teachers and pupils, and other information related to timetables, descriptions of grouping procedures, details of curricular areas.

The Pupil Record is made up of categories which reflect the activities of the *"target pupil"*; eight target pupils per class were identified for observation on the basis of pre-tests in basic skills. There are three main areas of pupil behaviour which are sub-divided into ten categories; thus, the pupil-adult interaction comprises four categories, the pupil-pupil interaction three

categories and the pupil activity area three categories. The activity of the target pupil is recorded by ticking one of the items listed under each category. For instance, if the observer sees the target pupil interacting with an adult, he has

(i) to decide about the target's role

(ii) to identify the adult involved in the interaction

(iii) to identify the nature of the adult's interaction and

(iv) to identify the adult's communication setting.

Records of the target's activity are made at regular twenty-five second intervals. These intervals are fed to the observer by means of an earpiece attached to a portable cassette tape recorder.

The Teacher Record was designed to focus specifically on the teacher, to record the various kinds of contact in which the teacher engages with the pupils. It comprises of two major areas

(i) Conversation

(ii) Silence,

which are sub-divided into lesser categories. The conversation category, for instance, is divided into two categories: Questions and statements which are related to the pupils' task, the task supervision and routine issues. These two categories are in turn divided into three categories each, and the latter are finally sub-divided into fourteen minor categories in all. The silence category incorporates two main divisions: Silent Interaction and No Interaction. Codings are made on this instrument over twenty-five seconds as in the case of the Pupil Record.

The reliability of both instruments was found to be satisfactorily high. However, in terms of the training of observers, these instruments no doubt pose particular problems. The tables of both instruments appear cumbersome. The Pupil Record has fifty-five categories and the Teacher Record twenty categories. Continual reference to these categories while observing appears difficult and time-concerning. The Teacher Record was found to be the most difficult, since decisions had to be taken at three levels before coding. The authors themselves agreed that observers could find it difficult to adjust to the systematic nature of the recording, resulting in uncertainty about the validity and reliability of the instrument.

The actual use of these instruments in the school context can also bring certain practical problems; for instance, the identification of the target pupils without the teacher's awareness, the ability to follow the same target pupil over a period of three years and so on.

So far in this study direct observation has been considered in terms of the use of systematic observation. It is, perhaps, important, to point out here that certain researchers doubt the value of observation schedules. There are a number of criticisms of such schedules, and these will be discussed in details in Chapter II. Stenhouse (1976)[55] among others has argued that systematic observation provides *"distorting mirrors"* of behaviour. The use of participant observation is considered by many as being a more appropriate method of classroom observation. The data is gathered by means of case studies, interviews and anecdotal accounts of classroom events (Delamont, 1976).

Several cautions related to direct observation of classroom on the whole should also be noted:

(a) some programme implementation dimensions do not lend themselves to direct observations;

(b) the effect of observers on the participants is not clear;

(c) observation techniques may tap only the mechanical use of the innovation

(d) direct observation has been normally used in studies based on a small sample of schools.

Investigations using a large sample have ruled out the time and cost considerations involved in the use of direct observation. Instead they have used such devices as questionnaires, interviews and content analysis of key documents for collecting their implementation dates. It is interesting, here, to mention the *"focused interview"* procedure developed by Hall and Loucks (1977)[56]. These authors have shown how at the level of the classroom teacher, there are differences in levels of use between current practices and desired end-points, each level being defined by a particular set of teachers activity. There are eight levels of use: non-use, orientation, preparation, mechanical use, routine, refinement, integration and renewal. In their view *"the content of the levels of use (LOU) dimension is the behaviours of innovation users and nonusers. The focus is not on how they feel but on what they do in relation to the innovation"*. A branched, focused interview with the teacher is used to assess the level of use of the innovation in the classroom. Evaluations of the technique indicated high interrater reliabilities for repeated

ratings of tape recorded interviews and a high correlation between interview ratings and ratings by ethnographers.

The implication of this model of different levels of use is that individual users may go through different levels over time as they develop the ability to use the innovation. The level of use thus becomes a function of time.

The LOU model is, no doubt, an asset to the researcher dealing with the study of the implementation process in depth. However, this approach suffers from certain drawbacks. Leithwood (1981)[57] points out that

> *"while the concepts associated with levels of use are distinct contributions to current thinking about the process of curriculum implementation, our own recent research suggests that further refinements are both warranted and possible".*

Churchman (1979)[58] makes a similar comment about the scales which, in his view, are too rigid and too vague to adapt easily and usefully to new circumstances. In the case of complex educational programmes, increased interviewing time and financial resources become other major considerations if the LOU model is to be used.

An adaptation of the LOU procedure, a more *"sensitive variation"* of the concept of levels of use has been developed by Leithwood and Montgomery (1980)[59]. A refinement proposed by these authors is the provision of an innovation profile which would replace a fixed set of stages to apply to all new programmes by a set of procedures for defining stages that are specific to a new curriculum. Such an innovation profile would help to look at a new curriculum in terms of its components or dimensions, and to arrive at an understanding of

levels of use for each of these components.

A third dimension (*"information sources"*) is added to this two-dimensional innovation profile (Levels by Dimensions). The authors assert that there are no unusual collection procedures demanded by their methodology, and that sources of information include written material, observed classroom activity and perceptions collected through interviews or questionnaires. These data in conjunction with the innovation profile provides a clear picture of the nature and degree of implementation in schools.

G. Neufeld (1979)[60] has also presented an abbreviated form of the LOU scales for use in the measurement of the degree of use (DOU).

His procedure uses separate scales to measure the two factors: the degree of use and the level of use, The modified LOU scale distinguishes between four discrete levels of use of a curriculum innovation, namely mechanical use, routine use, refinement and modification. The degree of use scale points range from non-use, outside use to partial use, regular use and integrative use. Various *"interview segments"* are used to determine the degree of use and level of use, which can eventually be represented in a single level of implementation matrix to provide a profile for an individual teacher.

In their review of the literature, Fullan and Pomfret (1977) refer to two main problems faced by most implementation studies, including the Rand study, namely

(i) self-reports by users

(ii) the global nature of the measures without any attempt at identifying specific dimensions of implementation.

Another important issue regarding the use of research instruments in implementation studies, concerns the two different approaches of evaluation, namely the experimental model and the illuminative model. To quote Stenhouse (1979)[61] here

> *"the issue is not qualitative versus quantitative, but samples versus cases and results versus judgements".*

Stenhouse (1979)[62] argues that the *"quantitative ingredient"* in case study and therefore in illuminative evaluation is at present too much neglected and makes a plea for the development of adequate academic conventions. According to him, case study can be subject to verification and capable of cumulation through the establishment of a microfiche archive of case records. The problem of clearance of data about living persons can be solved partly by anonymising the data, partly by allowing a restricted audience to have access to the data, and by the exclusion of information relating to the location of cases in the records. In the absence of such a disciplined convention, descriptive case study can appear *"both idiosyncratic and superficial"*[63]. Materials for case records can be derived from both oral history (interviews) and ethnography (participant observation).

There is a broad correlation between the evaluation strategies mentioned earlier and the two perspectives of implementation, namely fidelity and process cum mutual adaptation. The experimental evaluator like the investigator of the fidelity perspective, is mostly concerned with measuring the outcomes in terms of the intentions; on the other hand, both the illuminative evaluator and the researcher of mutual adaptation and process studies are more concerned about the process of curriculum development in the context of schools and classrooms.

However, the data-collecting procedure for either evaluation strategy can be made to fit into either the fidelity or mutual adaptation cum process study. As Fullan and Pomfret (1977) have pointed out

> *"there is no intrinsic reason why any of the methods cannot be used with either the fidelity or the degree of implementation approach, or the mutual adaptation or open-ended approach" (p. 367)*

On the other hand, the fact remains that formal testing, statistical conclusions, sample requirements among other aspects of experimental evaluation, are generally found unacceptable to both the illuminative evaluation and the researcher of mutual adaptation, since they tend to ignore many of the subtle variations of actions in schools.

Recent researchers in evaluations have suggested a combined approach which will help to limit the strategies of each strategy. Thus Pagano and Dolan (1980)[64] maintain the importance of conceptualizing the necessary integration of qualitative and quantitative methods, thus:

> *"We can view the categories of quantitative research as representing an ideal typification of people's experiences. The purpose of the qualitative component is to lay out the dynamics through which these types are constituted and to validate their meaningfulness within the context ... Statistical summaries without an elaboration of the environment and understanding that they represent are impoverished ..."*

The need to synthesize both methods was also pointed out by Munro (1977)[65] and Scrimshaw (1979)[66]. The later particularly argues that

> *"it is time to move beyond generalised debates about the relative merits of 'the' classical and 'the' illuminative approach."*

Implications of Past Studies for this Research

It is evident that a satisfactory study of curriculum implementation should take into account the three following factors: conceptualization, the specific determinants of implementation and a combination of approaches of evaluating implementation efforts.

The review of research has shown that the most consistent finding in the area of curriculum implementation concerns the failure of innovation projects to fulfill their intentions. Many of the studies have demonstrated the existence of certain common barriers or inhibiting factors to successful implementation.

The least consistent findings in the area concern to some extent the conceptualisation of implementation but to a considerable extent the measurement of the degree and process of implementation. Fullan and Pomfret's critical review of implementation studies refers to the enormous definitional and methodological problems involved in assessing both the degree and the process of implementation of educational innovation.

There is a lack of consistency in the use of certain fundamental concepts of implementation within the literature. This is not surprising when it is considered that the literature itself is drawn from a wide and differing range of sources and research perspectives with different value questions underlying them.

Examples have been given in the review to illustrate the different ways of conceptualizing implementation by various investigations. These differences are reflected not only in the definition of the term *"implementation"* itself, but also in defining such terms as *"mutual*

adaptation". It is true that all research (whether it is carried out by organisations like the Rand Corporation (Mc Laughlin, 1976) IMTEC (Dalin, 1978) or by individual researchers (Waring, 1978; Fullan and Pomfret, 1977) is conclusive on one point - successful implementation implies mutual adaptation. However, the definition of this term by investigators seems to imply varying degrees of adaptation to the original project. This study assumes that mutual adaptation does not mean distortion of the original project or its decay, but its modification over time subject to the needs of both the central change agent and the user system.

It follows from this assumption that the conceptualisations of the fidelity perspective and of the mutual adaptation perspective are not necessarily incompatible. Both processes are necessary for successful implementation of national government programmes.

Eden and Tamir (1979)[67] put this point very strongly:

> *"It is important to note that no one best answer can be provided regarding the superiority of the fidelity or the adaptive mode. It may be useful to look upon these modes as extremes of a continuum. It is up to the teacher to decide which point on this continuum will best meet her particular needs and preferences".*

The approach to this present study will be both a fidelity perspective and a mutual adaptation cum process perspective (Fullan and Pomfret, 1977). Employment of the fidelity perspective is justified on the grounds that the innovative project which is being studied here has planned the intentions, objectives, principles and characteristics of the innovation. At the same time, the mutual adaptation cum process perspective is used because it was assumed that the

innovation would legitimately be varied according to the local conditions in the school. The innovative project had made allowance for teachers to modify or supplement the materials to suit their students' needs while keeping to its basic framework.

Thus this study is contending that there can never be any real change in the schools of a centralized system if only one of the two ways of conceptualizing implementation is relied upon. The fidelity conception would not produce the continuous process of renewal within the schools which seems to be a necessary condition if innovations are to have any meaning.

There are certain methodological weaknesses in some of the studies carried out on the evaluation of implementation. Despite exhortations by some researchers (for example, Fullan and Pomfret) to develop more systematic methods of collecting and reporting implementation data, few such methods have been described.

In this connection, it is important to stress that one cannot avoid the impression that much effort has been wasted in the field of the evaluation of curriculum implementation, and that the contribution of writers in this field might have been perhaps even greater if research had been more cumulative in nature. This is particularly evident in relation to the evaluation techniques used for classroom observations. Thus, the existing instruments had not been used and improved. A considerable amount of time can be spent in searching for a suitable scale or developing a new scale. This practical difficulty could have been avoided by the modification of existing scales.

Moreover, this fact can be coupled with Rosenshine and Furst's (1973)[68] view that increasing the number of observational systems without any attempt at validation *"has led to the current chaos which is a pretence of research"*.

Another important consideration, here, has to do with the adequacy of the evaluation techniques. Investigations in the field of implementation have used so far one or two instruments for assessing the degree or the process of implementation. There is a need perhaps to consider the use of different tools simultaneously to find out how they compare with each other. Moreover, given the strengths and weaknesses of different methods and the different types of information uncovered by each method, it is better to use more than one method in a study of implementation.

In fact, this study will be considered as part of the present trend towards establishing a combined approach to assessing implementation. Experimental evaluation is considered appropriate for some aspects of the study, particularly in regard to the codification and statistical analysis of information from questionnaires and a standardized test. Reports based on the descriptions of experiences of participants and evaluators, and incorporating interview quotations, are attacked for being subjective and biased. Therefore it is felt that the use of quantitative statistical analysis will provide objective and scientific analyses.

At the same time, this study will aim at deriving many of its data-collecting procedures from illuminative evaluation in terms of observer perceptions of classroom happenings and interviews. It is

true that the classroom observations will be based on a more ordered approach than is generally accepted in illuminative evaluation, namely on the use of structured schedules. However, such schedules by reducing the dependence of the results on the judgement and bias of the observer, are in fact helping the illuminative approach to develop methods of obtaining information less subjectively.

Summing up, then, the present study will illustrate the combination of both approaches through the following features:

1. The use of both quantitative and qualitative material.
2. The use of both technical and non-technial language in the report.
3. A focus on both the degree of implementation (the outcomes in terms of the prior intentions) and the process of implementation (the activities of those involved in the innovation).
4. A portrayal of the perceptions of the participants as well as those of the evaluator or of the *"external expert"* (Scrimshaw, 1979).

Finally, one major difficulty with existing investigations into the evaluation of curriculum implementation arises out of the fact that there has been an overreliance on static conditions in the measurement of the success or failure of the implementation process. Time is a significant element in the implementation of a curriculum innovation. Earlier studies by P. Mort (1964)[69] suggested that the diffusion of educational ideas may take up to 50 years. Recent studies by

Havelock (1971) and Waring (1976) reveal that the time lag is at least 10 years. In many of the reported investigations, the new programme has been implemented for about 2 to 3 years. This period was not long enough to enable teachers to become quite conversant with the *"mechanics"* of the implementation process; it was insufficient for the new curricula to have been subjected to adequate evaluation.

Moreover, it is most probable that the data derived from a survey undertaken at one point in time, may not be meaningful at a different time. Fullan and Pomfret (1977) contend that the measurement of implementation should be viewed as a *"snapshot"* of what users are actually doing with respect to the innovation at one point in time. The study of implementation at intervals of time may detect certain changes in the factors affecting the implementation process.

The Research Problem

The present investigation is intended primarily to evaluate, within the limits of practicability, the degree of implementation of a Social Studies innovation project in Mauritius as well as its process of implementation. At the same time this study wants to investigate whether different patterns of influence affect initial and late implementation phases of the Project. Some of the main questions which the research set out to answer are given below.

The Social Studies Project is an innovative Social Studies Programme designed during the period 1975 to 1980 for the lower forms, of Secondary Schools in Mauritius. In recognition of the need for empirical research on the implementation of curriculum innovation in Mauritius, a study of the implementation of this Project was begun two

years after the new programme was introduced into schools. The study was carried out in two phases.

The first evaluation study which examined how effective the ensuing implementation was during the initial phase, was undertaken in the years 1976/1977. That was the stage when published materials were not available and when in-service training courses were mainly on an experimental basis and in the form of occasional workshops. This previous study had identified certain factors which were influencing the implementation of the Project. Summing up, it was then concluded that the low explicitness of the innovation, the teachers' inadequate skills and knowledge, mismanagement and incompatible organisational arrangements were factors inimical to the innovation.

Thus, past research coupled with personal experience and theoretical consideration, could give some indication of what are the most significant areas upon which the present study might concentrate. The present study (1979-1982) took place during the late implementation phase of the Project when published materials were made available to schools, when in-service training programmes were on a regular and longer term basis and when external examinations were operational.

This study proposes to measure the degree of implementation in terms of the achievement of certain dimensions which have been shown in other research to be associated with successful evaluation of implementation (Fullan and Pomfret 1977).

This aspect of the study is guided by the following research questions:

1. *to current structural changes (for example, timetabling arrangements, articulation of*

curricula) favour effective use of the Project?

2. *To what extent are teachers aware of the Project objectives? What are their preferences and expectations regarding these objectives?*

3. *To what extent do the teachers comprehend the philosophy and rationale of the Project, and its outcomes?*

4. *How do the teachers perceive their interest in and attitude towards the Project?*

5. *To what extent are the intended role changes implemented in the classroom?*

Few implementation studies have employed lists of educational objectives of the new programmes, and considered their relative importance by teachers and pupils. This study assumes that a teacher's acceptance of an objective and his opinion as to the feasibility of attainment of that objective is likely to condition his classroom behaviour and subsequently the degree of implementation of the Project's objectives. The interaction between teacher s' attitudes to objectives and the pupils' acceptance of these objectives and the pupils' perception of their teachers' preferences is particularly relevant here, since disparities between views of teachers and pupils may reflect weaknesses in the implementation process. Therefore, the following additional questions are asked in this study:

6. *What is the relationship between teachers' preferences regarding the Project's objectives, the pupils' acceptance of these objectives, and the teacher's image in the eyes of the pupils?*

7. *What is the relationship between the teacher's preferences and expectations regarding the Project objectives and pupils' achievement?*

To measure the process of implementation, the following questions are put forward:

8. *What happens in the classroom context when the programme is implemented?*

9. *Has the Project been subject to modifications over time?*

The independent variables which are used to assess the degree and the process of implementation of the innovative programme will include among others, the teachers' knowledge of the objectives, philosophy and rationale of the project, their attitudes, the changing roles and structural changes. However, this study will also concentrate on variables which are not always represented in implementation studies, namely the pupils' perceptions of their teachers' implementation strategy and of their teachers' image, pupils' attitude and their outcomes. An attempt at demonstrating the effects of these variables will be made through questions (6) and (7) above and through the following questions:

10. *How do the pupils perceive*

(a) their teacher classroom implementation strategy

(b) their own attitude towards Social Studies as a school subject?

11. To what extent do the pupils show mastery of the objectives and content of the programme?

Finally, an attempt will be made at comparing the patterns of influences during the initial and late implementation stages. Only those variables which are continuous variables in this follow-through implementation study, will be considered here. Questions worthwhile investigating in this respect are as follows:

12. To what extent have the teachers' grasp of the Project's intentions and rationale, their attitudes and classroom practices improved over time?

13. Do the inhibiting influences of the initial stage persist after five years of the Project?

14. Do different patterns of influences affect initial and late implementation phases?

These questions have been based principally upon theoretical considerations and upon the results of previous research. Further questions could be suggested (for example, To what extent has teacher-training changed teacher's attitudes? To what extent do the new materials and practices which are implemented, reflect the declared intents of the Project?). However, only those that can be confirmed or contradicted in the survey design have been selected here. Of course, it is not at all easy for any one study to confirm research questions in the complex field of curriculum implementation.

Implicit, here, is the use of *"ideal"* methods for carrying out the research, but this cannot always be assumed to be the case. This study raises certain practical problems; in particular a comparison of the pattern of influences affecting implementation at two different points in time presents considerable technical difficulties. These will be subsequently discussed.

Having given a brief review of previous investigations into curriculum implementation and having outlined the research problem and the limits within which it is intended to operate, it remains to describe the design and the methodology of the study. These points are taken up in the following chapter.

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69. Mort, P. R., "Studies in educational innovation from the Institute of Administrative Research: an overview", in Miles, M. B., Innovation in Education, New York: Teachers' College, Columbia University, 1964.

CHAPTER II

RESEARCH DESIGN AND METHODOLOGY

Overall Design

The causal focus of this study is stressed in the statement of the research problem which identifies the independent and dependent variables very broadly. This section is devoted to specifying these variables further. An evaluation of the degree of implementation and the process of implementation of a new curriculum such as is envisaged in this study, involves assessment of different features.

First, measures are needed on the characteristics of teachers who are involved in the implementation of the new curriculum. The differences between sub-groups of teachers with respect to their understanding of the Project's objectives, their knowledge of the major features of the Project's philosophy and rationale, their views of the facilitating and inhibiting factors of implementation, their views of the outcomes of the curriculum, of the strategy of the Project and of its status in the school curriculum are taken into account in this study.

Secondly, measures are needed for the pupils' perceptions of the teacher implementation strategy, for their understanding of the Project's objectives, their perceptions of the teacher's self-image, their attitudes to the subject. Here, too, the investigation will be designed to focus on stratified classes and sub-groups of pupils.

Third, measures are needed to find out what actually happens to the programme in the classroom. There are certain behaviours which

are expected from the teacher if the new strategy is being implemented. Therefore the characteristic of the Social Studies Project in the classroom which will be measured is the changing role of the teacher.

Fourth, the output of implementation for the pupils needs to be examined in order to assess the extent to which the objectives of the programme are achieved.

Finally, measures are needed to gather information on the nature or the process of implementation, on the context or the school situations into which the Project was introduced and on the patterns of influences affecting implementation over time.

Within this overall research design, it is necessary to select or devise particular instruments to provide the data required for each of the sets of measures mentioned above. The same instruments can be used to secure information for the two dependent variables - the degree of implementation and the process of implementation. It is recognised, however, that the measurements of the transformed nature of the innovation over time, of the further development and adaptation of the Project require a more open-ended approach. Therefore, this study will attempt to measure the process of implementation by unstructured cum participant observation as well as by direct observation, by interviews and open-ended items in questionnaires; and the degree of implementation by direct observation, questionnaires, interviews and a standardized test.

The degree of implementation will be measured by specific dimensions separately, not globally. The following tables summarise these dimensions and their specific measuring instruments:

Table 1: Instruments used in the collection of the Degree of Implementation Data

	Instruments	*Focus*
1.	Teachers' Questionnaire	Teacher knowledge and understanding of Project's materials and strategy, perceptions of Project's objectives and of their feasibility of achievement, valuing of Project's status and of its outcomes, perceptions of facilitating and inhibiting factors.
2.	Pupils' Questionnaire	Pupils' perceptions of teacher implementation strategy, of the relative importance of the Project's objectives, and their attitudes to Project.
3.	Direct observation	Teacher changing role behaviour.
4.	Standardized test	Pupils' understanding of the objectives and of the content of the new curriculum.
5.	Interviews (structured)	Teacher understanding of Project's rationale and strategies.

Table 2: Instruments used in the collection of the implementation process and context data

	Instruments	*Focus*
1.	Direct observation - Systematic method. (Flanders Interaction Analysis System + Evans/ Behrman modified schedule).	Teacher-pupil interaction; Teacher implementation of Project's main features (for example, type of questions, handling of value issues).
2..	Direct observation with unstructured cum participant observation.	Adaptation of the Project to classroom situations.
3.	Descriptive account.	Description of the impressions of the observer as regards the teacher and pupils, classroom lay-out and climate.
4.	Documents.	Adaptation of the Project to the socio-political context.
5.	Interviews (structured)	Class timetable, resources, support given to schools, socio-political pressures on innovation.

At the start of this investigation, consideration was paid to instruments which have been devised by previous investigators in this field to see whether they could be appropriately adapted for use in the present study. Satisfactory measures for the purpose of classroom observation were available, but for the other data to be collected, it was decided to devise research tools more appropriate to this study.

Sampling procedures

In an investigation of the survey kind, the selection of the teachers and students forming the samples is particularly important. Actually, in this study it was decided to use both a complete and a partial coverage of the target population. The decision was governed by the following criteria:

1. In view of the small size of the island, it was decided to cover the population of Form III teachers fully by means of a Teacher Questionnaire. Data were thus acquired from a complete census of Form III teachers (N = 210 in 1980) involved in the teaching of the new Social Studies Programme. The enumeration of these teachers depended upon a complete count of all the teachers who were thus concerned. The problem of acquiring information was not too complex to rule out the practical possibility of a census.

2. Problems of timing, cost and organization militated against the complete coverage in the collection of data by means of a Pupils' Questionnaire, classroom observations and a Pupils' standardized test. Samples were thus used and were made to

suit these instruments. In all cases, stratified random sampling was used because the schools as well as their population were not homogeneous, but consisted of several sub-groups. Stratified sampling ensured that no type of school was omitted from the sample, and it also avoided overloading in certain types of school.

In drawing up the sampling frame, therefore, certain criteria which are usually associated with significant differences in the implementation of new curricula, were taken into consideration. Typical stratifiers were type of school, size of school, urban/ruralness of the school, and sex of pupils.

3. The allotments of schools from each stratum for the sample were made on the basis of proportional allocation. In other words, each stratum was made to contribute to the sample a number that was more or less proportional to its size in the population. Proportionate allocation required information about the relative size of the strata in the population. Good estimates of these numbers were provided by the Private Secondary Schools Authority and the Evaluation Unit of the Mauritius Institute of Education, which normally issue a yearly list of secondary schools and students population.

4. A *"multi-stage"* sampling (Moser & Kalton, 1975)[1] was adopted in an attempt to select appropriate samples for the measuring instruments other than the Teacher Questionnaire. Thus the random sample for classroom observations was selected from the stratified sampling frame covering the entire population of Form III teachers. The sample for the pupils' questionnaire

was taken of that first sample, and the sample for the standardized test was taken from that second sample. The advantages of that *"multi-stage"* sampling are that it helps concentration of field work and saves time and labour. Moreover it helps correlation studies.

5. To permit sub-classifications of a fairly refined order, it was decided that the desired samples should contain the following:

(a)	for classroom observations	80 teachers from 69 schools.
(b)	for pupil's questionnaire	around 1900 pupils belonging to 53 classes and 50 schools.
(c)	for interview with staff	around 20 teachers.
(d)	for pupils' standardized test	around 1600 pupils from 40 classes/schools.

6. It was decided to obtain implementation data from the pupils at the third year secondary level. This meant that if the pupils were to have been thoroughly exposed to the implementation of the new curriculum, it would have had to have been in operation for at least three years. In all cases, the pupils had had experience of the new curriculum for three years.

Possible weaknesses in the Design

In a study designed to examine the determinants of implementation and their effects on the degree and process of implementation, the problem that faces the researcher is how to reduce the probability of extraneous factors from influencing the dependent variables, or how to minimize the number of plausible rival explanations. It is

recognised that while it is impossible to eliminate all potential sources of unwanted and unexpected variables or of bias in the research plan, adequate concern for the design might eliminate the major distortions.

With regard to distortion due to the influence of extraneous variables, the view could be advanced here that since this study is mainly concerned with illustrating changes, the likelihood that these changes are substantially caused by other extraneous factors could be reasonably discounted. In this case it is valid to assume the random incidence of factors other than the new curriculum. Moreover it might be worth mentioning, here, that analysis of covariance is a way of handling a problem of this kind, but it is not appropriate in this case due to the contextual variables or the various school situations in which the Project was introduced.

On the other hand, the very operation of the investigation may have unintentionally created biases that could not be separated from the independent variables. As far as was practicable, great precautions have been taken to minimize the effects of bias resulting from the researcher's expectations and the subjects' awareness of their role in the study. The design of the questionnaire, interviews and observational studies was such that the respondents never knew the purpose of the study. Even the observers who helped in carrying out systematic classroom observation were kept in the dark as to the expected outcome of the investigation. The letters addressed to the schools in this respect testify to this tactic. It could thus be said that these *"double-blind"* investigations (Katzer, Cook, Crouch, 1978)[2] have minimized this source of bias.

Moreover, to reduce rival explanations due to measurement, such controls as extensive observer training, avoiding interviewer bias, standardizing instruments have been considered. Similarly in the operation of the standardized test, conditions of testing were directly under the control of the researcher who furthermore acted in her capacity as a Chief Examiner.

With the degree of control that has thus been maintained there is no likely factor which could be said to affect seriously the generality of the findings of this study or its external validity. The use of a random selection of samples leads to appropriate generalization to the target population. Likewise, the use of the method of triangulation in measurement procedures, using a measure with convergent validity, tends to reduce the threats to the external validity of the design.

However, it is recognised that time was a factor particularly difficult to control, especially in a study which is partly concerned with measuring patterns of influences affecting implementation at two different points in time. The problems of experimental mortality, for instance, (the replacement of subjects in the previous study by new ones) and of maturation (particularly instrumentation change) could be said to be acute, rendering the comparability of data difficult, if not invalid. However, in all fairness, it could be said that the problem of instrumentation change would become a serious one only if this study was entirely concerned with a classical experimental design. Moreover, it may also be stressed, here, that the collection of base-line data and current data more or less in the same way for purposes of comparability, does not necessarily mean administrating

the same measuring instruments repeatedly. In the present study, parallel forms of the previously-used instrument devices were thought to be more desirable. This, at least, ensured that the researcher could take into account more elaborate methods of collecting information.

In an attempt to minimize the threats of instrumentation change to the internal validity of the design, it was decided to concentrate substantially on interviewing in depth. It is significant to point out that the interview schedule is the only instrument which has retained a format more or less similar to the one used in the previous study of implementation by the researcher.

The Research Environment

Some dimensions of the setting in which this study was conducted, will be briefly considered in this section. The description refers specifically to the *"existing"* environment. Following the summary of research efforts to describe environments by Moos (1973)[3], the description will concentrate briefly on the ecological dimensions, organizational structure, the behavioural characteristics of the inhabitants of the environment, and the psychosocial climate reflecting the perceptions of the environment by individuals.

The Ecological Dimensions

Situated some 500 miles east of Madagascar and some 1250 off the nearest point of the African coast, Mauritius is a small volcanic island, about 720 square miles in size. It was formerly a French, then an English colony, but it became independent in 1968. It has

very complex socio-economic and cultural characteristics which present several problems to those responsible for education.

It has a multi-racial society with a variety of languages, which has come to be an important problem in the national, professional and social life of Mauritius. These languages range from English to French, *"patois-creole"*, and seven oriental languages. With a population standing at just short of one million and an average density of about 1300 per square mile, the island is exposed to overpopulation and unemployment. The population is very young with nearly 35 per cent below 15 years of age. This means the number of those looking for jobs keeps increasing. The economic structure of the island is dominated by the sugar industry, but is diversifying itself in other sectors. While the sugar industry remains important as the main earner of foreign exchange, manufacturing is central in the strategy for job creation. The island is also becoming well-known internationally as a tourist holiday resort.

There are marked differences in the cultural environment of the children and the financial circumstances of the families, resulting particularly in an imbalance between town and country.

Aspects of Organizational Structure

Public education in Mauritius is the responsibility of the Ministry of Education and Cultural Affairs. Education consumes a large part of Government spending - 16 per cent of recurrent expenditure in 1981-82. There are some 800 schools offering pre-schooling, over 250 primary schools and about 142 secondary schools serving the island. The primary schools take children from four and a half to

eleven years, and the secondary schools from eleven onwards. Free primary education is available to all and although it is not compulsory, over 90 per cent of this age group attend schools. Free secondary education is available to all those who pass the Certificate of Primary Education. Post-Primary schools or Community schools have been established three years ago to accommodate those who have twice failed the Certificate of Primary Education.

The whole of the education system from the age of four and a half years to eighteen years is conditioned by examinations, selection, success and failure in almost equal parts. The education system, a legacy of the former colonial period, is exclusively academic in nature. Technical education is neglected by parents and schools alike. The World Bank funded the building of six Junior Technical Schools and six Central laboratories. The buildings have now been replanned and redesignated Junior Secondary Schools. In other words, they form part of the normal Secondary Schools system and are offering education up to Form V.

There is a fierce competition for secondary school entrance. Secondary education is offered to a limited proportion of students in 8 State Schools, 15 Junior Secondary Schools and a large number of private schools (119). The Government is now assuming responsibility for the running of all private schools. Expressed in terms of pupil numbers, the severity of the selection process can be illustrated thus:

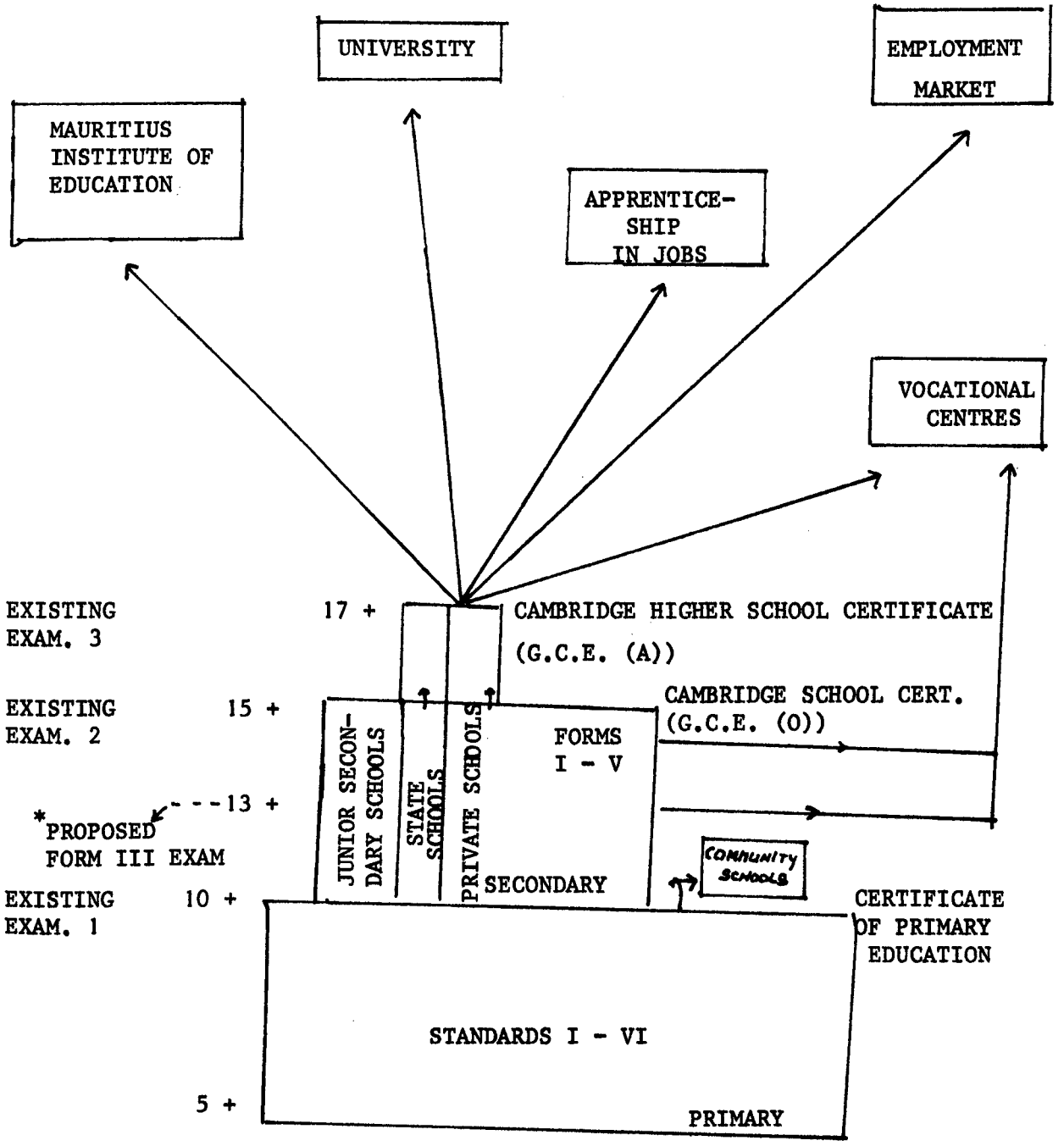
Table 3: Number of Passes in 1977 and Currently

EXAMINATIONS	1977		CURRENTLY	
	No. of Entrants	*Pass %*	*No. of Entrants*	*Pass %*
1. Primary Certificate	33 964	44	35 000	45
2. Cambridge School Certificate	11 664	43	12 500	45
3. Cambridge Higher School Certificate	1 795	35	2 000	34
4. London General Certificate of Education	1 645	42	(included in no. 2)	

It is thus obvious that the system is producing large numbers of educational drop-outs at various levels; less than 2 per cent of those who enter the system of Primary level, finally reach the desired goal of Higher School Certificate.

Officially the pupil/teacher ratio is about 32, but this figure varies considerably from school to school. The efficiency of teaching most subjects, particularly language and other skills, relates closely to the teacher/pupil ratio. The State Schools have relatively small numbers of students in the classroom, while many of the unaided private schools have over-crowded classrooms, sub-standard buildings, inadequate equipment and resources, and a large proportion of unqualified teachers. The situation in those schools is gradually improving now that the Government is controlling their running. The majority of the schools are traditionally organised, that is, they are tightly controlled schools with self-contained classrooms.

The EXISTING 6-5-2 organizational structure of Education in Mauritius



* The new Form III examination will lead to a Certificate of Junior Secondary Education is expected to replace eventually the existing 11 + examination.

The role performance of teachers in the majority of Secondary Schools is fundamentally traditional in nature. The school-day is timetabled into clear-cut periods within which teachers try to transmit a specific body of knowledge and a number of skills to classes comprising students of the same age range. All students go through the same sequence of standard subjects. The teaching style can be described as *"the transmission-reception"* style, without much student interaction. Indeed, the teacher takes the initiative in teacher-pupil interaction and their communication is primarily in the form of questions and answers. Books or curriculum materials are assigned to be read, and work has to be completed within a specified time in order to achieve the curriculum objectives of the school. As far as could be judged by observations and from the previous survey, the teachers vary in terms of age, experience and quality of their teaching. Many teachers in the Private Schools have no more than a School Certificate or Higher School Certificate as qualification, and a large proportion of these teachers are still untrained. These untrained teachers lack confidence in adopting the new teaching style advocated by the Project. A certain amount of variation depends on the characteristics of the School, the class, the sex of the pupils, the aspirations of pupils and their parents among other things. These sub-group differences are meaningful and worthy of study.

As already outlined, high qualifications are the aspirations of most children and parents. The latter want their children to be provided with an education that provides security of employment and a training more academic than technical or agricultural. There is, therefore,

a widespread concern for examination success sufficient to support a massive private tuition system right from Primary Classes, and for Mauritius to spend some 8 million rupees (£500 000) each year on fees for external examinations. The high aspirations to education are reflected in the curriculum emphasis on formal education and literacy. Pupils are used to traditional learning activities and some resent new techniques adopted by the teachers.

The essence of any educational reforms in the field of academic schooling would seem, therefore, to run counter to the society's expectations of education. In other words, such a society can exert powerful pressures on the organizations that may constrain a desired innovation. The ordinary Mauritian is not interested in this type or that type of curriculum; *"useful"* or relevant education tends to be regarded as an inferior product devised to perpetuate his inferior status. The social attitudes regarding the stigma of manual work still remain strong; unemployment is now changing such attitudes to a slight extent.

It is not easy for an educational system to cope effectively with such attitudes in the interest of national development. Efforts to secure the agreement of society are thus a necessary part of the process of planned change.

Psychosocial Climate

This is mainly concerned with the innovative climate as perceived by the individuals of the environment. The UNESCO/UNDP proposal of Educational reform (1974) to the Ministry of Education was well received by the educational community at large. Major proposals were

concerned with (i) a new core curriculum with electives, new syllabuses, new materials and improved teaching skills at Forms I to III levels (A Visual representation of this curriculum framework is given in FigureIII on the next page).

(ii) an appropriate method of assessing achievement through a revised series of assessment tools and examinations.

(iii) Teacher training in the use of the new curricula.

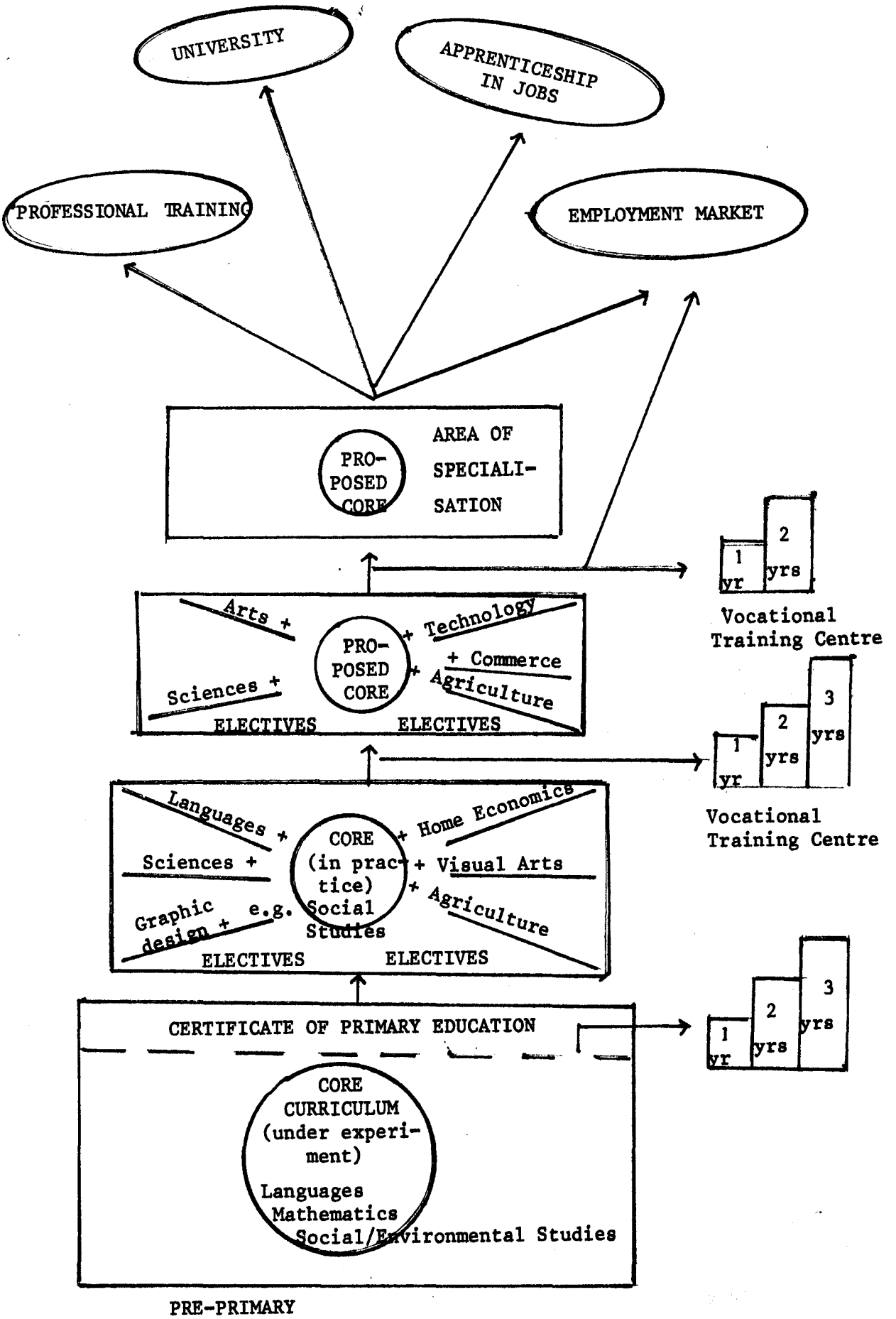
The educational reform was to be based on and administered by the Institute of Education created in 1974. Foreign staff was initially involved in the undertaking. The innovative climate has thus been established. To quote two UNESCO evaluators here:

> *"Whereas in another country such an ambitious undertaking would have appeared rash ... in a small island with easy communication, the three pronged approach (curriculum development, teacher training and examination) was entirely defensible and ostensibly affordable"*
>
> *(Pozzi and Higginson, 1980)*[4]

On the whole, the new materials have been well received by pupils, teachers, parents and the public at large who collectively seem to find them more appropriate and interesting than the previously imported textbooks. The Social Studies materials have taken a definite step in the Mauritianization of content by promoting an awareness of the students' immediate environment, traditions and culture. By having History and Geography the traditional disciplines, predominant in the

CURRICULUM AND ORGANISATIONAL MODEL

(Paradigm suggested by the Mauritius Institute of Education - 1975)



integrated curriculum, the materials contain a relative proportion that is perceived by the teachers as being familiar. Although the Project has tried to break new ground, it has presented change in a radically modified framework. This explains why teachers have shown a desire to implement the innovation. On the other hand, from observations and the previous study carried out, it is obvious that the Project is making tremendous demands upon teachers both in terms of increased areas of knowledge and of changing role performance in the classroom. How far the change has become evident in the classroom will be the concern of this investigation.

The Setting of the Innovative Project

The inclusion of Social Studies in the Forms I to III core curriculum of Mauritian schools is based on certain recognisable values. There is first the feeling that in a country which has become independent since 1968, there is the need to promote national sentiment and civics. There is also the need for the consolidation of its plural society through the respect, tolerance and acceptance of other cultures. A course relevant to the pupils' present experience and social needs is considered equally important.

The obvious sources of knowledge for the new curriculum are the traditional subjects of Geography and History and the Social Sciences including Sociology, Economics, and Political Science. An interdisciplinary approach has been considered necessary to encourage a unified approach to Social Studies. Beyond Form III, specialist teachers teach separate subjects up to Forms V and VI.

The materials which are presented in book form after two years of trialling, have a structured nature. They include both pupils

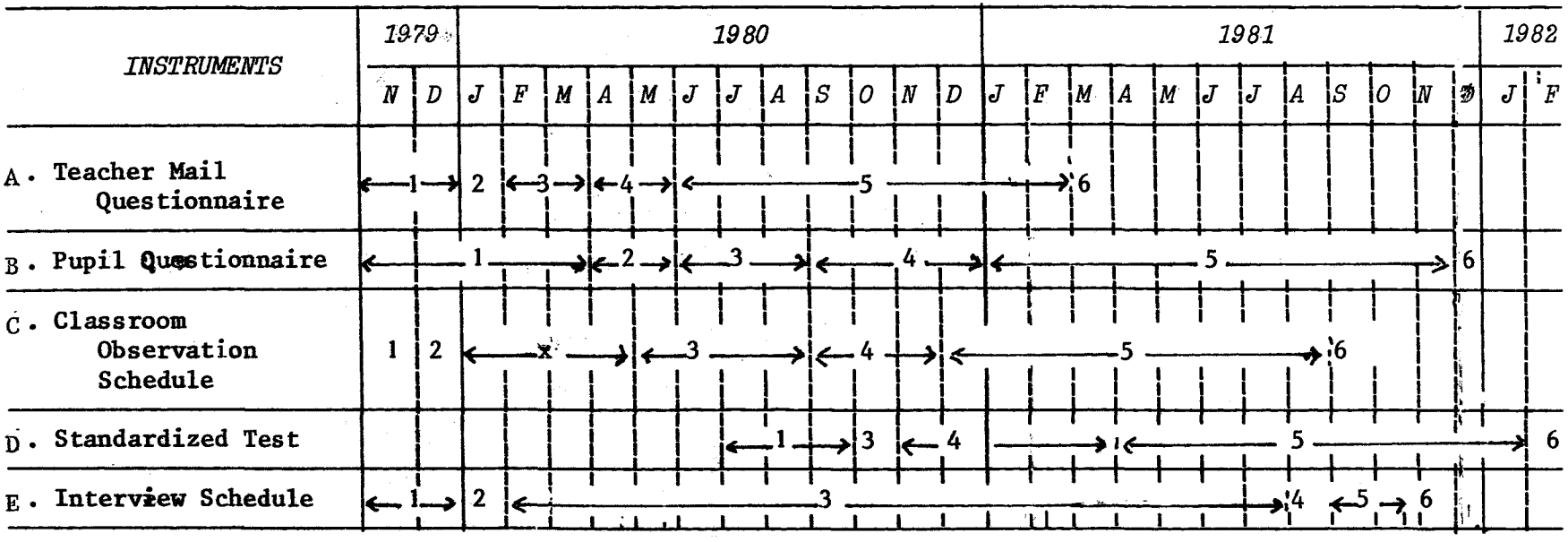
materials and Teachers' Guides which provide ideas to the teacher, while leaving him or her free to supplement these ideas. Introduced in 1976 at Form I level in 40 per cent of the schools, the materials went through successful trialling years until they reached 100 per cent of the students at Form III level in 1980.

The Social Studies Project proposes changes in the teacher's role and classroom interaction. The traditional role of subject specialist or teacher of separate subjects is being replaced by an integrated teacher without recourse to team teaching. Similarly, the predominant instruction-based teaching, characterized by memorization of facts and students dependence on the teacher's authority is expected to give way to a modified enquiry approach which encourages class participation, discussion and a range of thinking practices.

Some special teacher preparation is considered a requisite to successful implementation. Orientation of teachers for the new curriculum has taken the form of long-term in-service courses at the Institute of Education, and of regular workshop sessions.

It is also considered important that the new curriculum should be associated with a special examination. Changes are thus initially directed at the introduction of a national examination at Form III level. It is expected that this new examination will eventually lead to a Mauritius Certificate of Secondary Education. The first Form III examination scheduled to take place in 1981 may now be conducted in 1983.

Figure IV: Time Schedule - Data Collection and Analysis



Key:	
Construction and submission to supervisors for approval	1
Pre-test	2
Administration	3
Processing	4

Analysis	5
Completion of data analysis	6
Training of Classroom Observers	x

Data Gathering in the Schools

Each instrument or technique used in research is known to have some strengths and weaknesses. There is a need, therefore, for *"multiple operationisms"* (Smith 1975)[5] or *"triangulation"* as a corrective for weaknesses of any measurement procedure.

In an attempt to avoid the distortion of each technique, combinations of techniques have been used in this study within limits of practicability, financial budget and time. The combination of techniques would also help the investigator to cross-check data collected by each technique. The different measures should yield similar results; and a high correlation between two measures could point to convergent validity.

This study employs survey methods such as questionnaires, interviews and observational studies. Data was also collected through a standardized test and was supplemented by existing records.

A. *The Teacher Questionnaire*

The mail questionnaire sent to the teachers in 1980 started the main phase of data collection. Since it was decided to cover the census population of Form III teachers, the mail questionnaire was considered to be the only feasible approach; it permitted wide coverage at minimum expense in money and effort. Questionnaires were sent by mail and returned by mail without the use of personal contact or delivery.

Questionnaires were also found easy to administer and to provide a variety of comprehensive information. It was recognised that

while information obtained through questionnaires might be less objective than that obtained through observational methods, it had the advantage of providing the views of the involved participants, namely teachers and pupils. Questionnaires were thus amenable to the technique of triangulation, and this technique has been used in this study to obtain and corroborate the viewpoints of both teachers and pupils on certain aspects of implementation.

Construction of the Teacher Questionnaire

The questionnaire was in two parts:

1. the first section covered teacher's background data
2. the second part dealt with the teacher's understanding of the objectives, rationale and philosophy underlying the Social Studies Project and their understanding of the facilitating and limiting factors related to the use to the Project.

The second section also included aspects of the respondents' thinking of the Project materials, strategies and future. Since each question in the questionnaire was related to the problem under investigation, the content validity of this instrument was thereby ensured.

In constructing the questionnaire, the investigator had first to decide whether the items were to be open questions or closed questions. The choice depended largely on the basis of the criterion of usability, and eventually a combination of the two was thought to be better that the exclusive use of one. Each has its merits and limitations, and it is a matter of using the proper format to stimulate appropriate response.

Closed questions were used not only because they were easy to code and analyse and enabled the comparability of answers from one respondent to another, but also because they could define in a rather distinct way the intent of most questions.

The closed questionnaire was used for Section I and part of Section II where it was used to classify respondents' views on some clearly understood dimensions (for example, the facilitating and inhibiting factors of implementation). The closed questions selected for Section II, included the ranking technique and the intensity scale or the familiar Likert continuum of *"strongly agree"* to *"strongly disagree"*. The open-ended formats were found more appropriate to tap the level of respondents' information, to allow them to answer freely and clarify their position with regard to some of the items.

In constructing the questionnaire, thought was also given to its length; it was realized that there was a limit to the demands which could be made on the respondents, and that a balance must be struck between getting as much information as possible from the target population on the problem of implementation, and getting complete and reasonable answers to the problem.

The questionnaire underwent critical appraisal before it was sent to potential respondents. It was first presented to the researcher's supervisors for a check of inclusiveness of the items chosen and to refine the wording. This was thought to be another way of checking content validity. Then a pretest was carried out to check whether the questionnaire would yield satisfactory results with the respondents. The teachers on whom the questionnaire was tried out, were as similar

as possible to those in the main inquiry. Those teachers were satisfied that the questions were stated precisely and did not assume too much knowledge on the part of respondents. It was felt that the respondents who have been more or less exposed to the curriculum technical terms during the previous year of the Project, should be in a position to tackle the questions adequately. The only work which could cause some difficulty of interpretation was *"outcomes"* in Question 13, and it was agreed that the word *"results"* should be placed alongside it in brackets.

The identifiability of the respondents was obtainable without infringing on their anonymity by numbering the questionnaire before it was sent out. The numbers were made to coincide, as far as is practicable, with the numbers put on the list of school names; the identifiability rested, therefore, with this list.

Distribution of Questionnaire

It was decided to approach the census population of the Form III teachers in the island (N = 210 in 1980). The choice for a national survey completely covering the Form III teaching population was made on the basis of the geographically and socially accessible situations of the schools, and also on the basis of the sponsorship of the questionnaire; the cover letter accompanying the questionnaire was signed by the Director of the Mauritius Institute of Education.

Response

In an attempt to increase response rate, certain factors were taken into account, namely the sponsorship of the questionnaire, the inclusion

of a stamped addressed envelope inside the questionnaire, and the use of two follow-ups. All three helped to raise the response rate to 84 per cent.

The questionnaire was sent to the target population towards the end of January 1980. Two reminders were sent to non-respondents around mid-February and in the middle of March respectively. The date limit for return was fixed around mid-March which gave the respondents one and a half months approximately to complete and return the questionnaire. This period of data collection was rather long in view of the occurrence of bad weather during that period which forced the schools to close down for a few days on at least three occasions.

It was felt that a longer period might have encouraged bias in the responses of late or reluctant respondents. Some nonresponse was not only inevitable but was also anticipated. The response rate (84 per cent) was quite good given the fact that the questionnaire was not sent directly to individual teachers but addressed to school principals for re-distribution to their staff-members.

It was noted that prior to the dispatch of the first reminder the survey had yielded a response rate of about 70 per cent; the two reminders brought in a further 14 per cent of replies. This high rate of return of mail questionnaire made for great validity in the results of the questionnaire.

The percentage of non-response (16 per cent) did not result in a data gap that markedly distorted the real situation. Furthermore, the non-respondents could be identified; they belonged to the sub-groups represented in the census that was taken. Since they were similar in all characteristics, the respondents could be regarded as wholly representative of the population.

B. *Pupil Questionnaire*

This study was concerned with collecting information on the pupils' experiences of implementation. No research had been carried out previously on the attitudes of pupils to the Social Studies Project, and yet pupils' attitudes are known to influence the degree of implementation as well as the process of implementation of a new curriculum.

The most appropriate method which would allow a pupil to express his or her views freely was sought. A questionnaire was considered to be the most fruitful method and the one most economical of time too. A combined closed-and open-question format was used which would take into account the pupils' problems of language and conceptual level of difficulty, as well as their motivation to respond.

The researcher was anxious to gain responses from a reasonable sample of pupils so that the information would not be biased by selecting the perceptions of only certain groups of the pupils. Thus, it was decided to submit the questionnaire to a stratified random sampling of middle-ability third year classes (the 13 + age group). The selection of Form III classes had, of course, to be related to the sample of class-teachers who had been systematically observed and who were involved in the Teacher Questionnaire. The Pupil Questionnaire was administered during the Second Term of the school year (1980) to two classes of Form III in large schools and to one class in small schools. The number of classes thus involved was 53, and the number of pupils was 1 907.

The questionnaire was designed first to provide information about the pupils' perceptions of their teacher classroom strategy.

Various merits could be claimed for student perceptual measures of their learning environment, especially of their teacher implementation strategy. First, they are economical, easy to gather and analyse. Second, pupils particularly the well-informed ones, are usually eager to submit their views on a new curriculum. Evidence for this enthusiasm was obtained in this study from many of the pupils themselves and their teacher shortly after the filling-in of the questionnaire was completed. The pupils were pleased to have been asked for their views and many expressed the wish to discuss further points with the investigator. Third, pupils' perceptual measures are potentially more reliable than neutral observers' views because they are based on pupils' experiences over a long period of time, or an extended period of participant observation. Moreover, they involve the pooled judgements of all pupils in a class, and these can be averaged to provide an estimate of the class consensus; they may also reveal variations within classes. Fourth, if teacher implementation strategy as perceived by pupils, influences pupil outcomes or correlates with neutral observers' views, then pupils perceptions can be said to be potentially valid for research on implementation strategy.

A descriptive, two-point answer scale was designed to draw upon pupils' perceptions of their teacher implementation strategy in order to discover whether teachers were employing methods appropriate to the Social Studies approach. Pupils responded to each item in the scale by indicating how *"true"* or *"false"* the statement was for them. Half of the scale consists of items which, if endorsed, signify agreement with the Social Studies approach, while the other half signifies disagreement with it. The existence of these pairs of positive/ negative items was not communicated in any way to the respondents.

The idea behind the use of such a scale is that by establishing and elucidating the relationship between positive and negative items, pupils would show their understanding of their teachers' implementation strategy.

The second item in the Pupil Questionnaire was designed to parallel one item in the Teacher Questionnaire, namely the one relating to the ranking of the Project's objectives in order of priority. The same list of nine objectives given to the teachers for ranking, was also given to the pupils who had been taught Social Studies for the third year running. The pupils were asked to rank these objectives in order of importance to them, and also to rank them as they thought their teacher might have ranked them. The purpose of this item was to see the interaction of the pupils' appreciation of these objectives with the teachers' attitudes to these objectives and to compare the pupils' estimate of the teachers' response with the actual teacher response.

Finally, the third item in the Pupil Questionnaire was designed partly to test pupils' understanding of some of the objectives they have previously ranked in the second item and partly to test their reaction to the discontinuity of Social Studies beyond Form III. The ranking of objectives in terms of their priority reflects more the pupils' perception of these objectives, but does not indicate how they understand these objectives. In order to gain some understanding of the way these objectives were understood, a projective technique was used.

The stimulus used was a story which depicted a variety of situations faced in the classroom by a Form III pupil of the same age as

the pupils being tested. After reading each situation, the pupils were asked to complete the sentence below each situation so as to say how the character in the story was thinking and feeling. From the way the respondent perceived and interpreted the situations his answer would reflect his own thinking and feeling. In view of the multi-racial student population of Mauritius, the selection of a name for the character in the story had to be carefully made so as to avoid any possible bias in pupils' response; a pet name which is used among all the ethnic groups in the island, was eventually selected.

The pilot version of the questionnaire revealed that reading difficulties would be a major problem to overcome; the less able children, particularly those in rural areas, were handicapped by their lack of verbal skills. To overcome this problem, the researcher decided to administer the printed questionnaire herself in all the classes sampled. This would ensure that the same instructions were given, while at the same time standardising the extra help that was given to those in need. Although it was thus considered important that the questionnaire should be administered by someone unconnected with the school, the class teachers in all cases were invited to stay in their classroom while the whole class tackled the questionnaire at the same time.

In administering the questionnaire, the researcher read out the items slowly first to the whole class, placing emphases on the key words in each item and explaining the procedures to be taken in English, French or the vernacular. Pupils were also shown on the blackboard how they should enter their replies on the questionnaire. This extra help was given to facilitate the pupils' performance ontthe items, and

such help was given to classes in both rural and urban schools. After consultation with class-teachers, pupils were requested in some cases to write their response to the open-ended item in either French or the vernacular. At the very start, the pupils were assured that their questionnaire would remain confidential and that in any case their views had nothing to do withtheir school progress or with their selection for higher classes.

C. *Classroom Observations*

The main objective of the classroom observation exercise in this study was to measure, over an extended period, the degree of implementation of the main features of the Social Studies innovation programme. The classroom is undoubtedly the key area where the intentions of a curriculum innovation project are transformed into actions. It was felt, therefore, that an assessment of implementation should be based not only on the ideas and attitudes of the teachers and the skill and knowledge they possessed as was repotted in questionnaires and interviews, but also on the kinds of relationships they established with their class. Most researchers in the field of implementation (e.g. Fullan and Pomfret, 1975) have recognised that classroom observation is the best measurement of implementation. In order to overcome the extraneous forces that shape the behaviour of teachers and pupils as they respond to questionnaires, the subjects must be studied *"naturalistically"*. In deciding about the choice of an appropriate technique for collecting classroom data, it was recognised that the repertoires of adequate procedures are rather limited. To quote Mc Intyre and Morrison (1977)[6] here:

> *"There is a dearth of adequate procedures for collecting information on teachers' and pupils'*

reaction to the ongoing minute-by-minute events of the classroom, whether in terms of their comprehension of what is being said, their interpretation of each other's intentions, or the selective foci of their thinking and attention".

At the very start of the exercise, therefore, it was recognised that there is no ideal single technique for classroom observation and that any technique is bound to be limited in what it can do. Equally important was the recognition that there is a multiplicity of purposes for which classroom study is undertaken and that each purpose requires a technique of its own. The decision which had to be taken finally was how to observe and record implementation data, and how best this could be achieved given the circumstances operating in the schools and classes of Mauritius.

Structured observational systems were eventually selected partly because it was felt that the collection of implementation data might be facilitated by the use of some existing, well-known instruments which have proved their worth already. One of these is the Flanders system which has been used in more correlational and experimental studies than any other classroom observational instrument found to date. The use of structured systems or category systems to focus upon the activities considered important for high implementation of innovation programmes has been advocated by Rosenshine and Furst (1973)[7]. Mc Intyre (1978)[8] puts the point very strongly:

"It would be perverse not to use systematic observation if one were attempting to discover to what extent certain specified innovations in teaching methods had been implemented".

On the other hand, this study acknowledges the fact that classroom interaction analysis following the tradition of Flanders has been criticised as suffering from a number of limitations. For example, a common criticism of Flanders' system and one made quite explicit by Delamont and Hamilton (1976)[9] is that the categories are predetermined and information which does not fit in the categories, is not recorded:

> *"the potential of interaction analysis to go beyond the categories is limited".*

A similar point was raised by Edwards and Furlong (1978)[10]

> *"The categories represent preconceived ideas about what is really important in classroom interaction".*

This specific selectivity is thought to be a weakness in the sense that it reflects only certain aspects of classroom life. However, Galton et al (1980)[11] have justifiably pointed out that this weakness affects all observational techniques

> *"Like any data-gathering technique, systematic observation abstracts from the totality of the social world those aspects thought to be relevant for particular investigating purposes".*

Another serious criticism is that information about the *"temporal and spatial context"* (Delamont and Hamilton, 1976) is ignored by the interaction analysis. Edwards and Furlong (1978) reinforce this point by quoting Bernstein:

> *"So much of what is said in any context cannot be understood apart from the context, and the context cannot be read by those who do not share the history of the relationship".*

Walker and Adelman (1976)[12] add to this criticism in their consideration of distinctive shared meanings among teacher and pupil:

"The culture of the class becomes so strong, the meanings it assigns to particular items of talk so rich, that the talk itself becomes almost inaccessible to an outsider".

Mc Intyre (1978) who has examined the criticisms against a systematic observation and who has argued that Flanders' work has received more than its fair share of criticism, concludes that the two above-mentioned criticisms are the ones which cannot be denied.

Bennett (1976)[13] has pointed out the difficult problem of random sampling within observational studies. Investigators are made to observe *"a narrow range of behaviour of a small and unrepresentative sample of teachers drawn from a population of unknown parameters"*. However, Galton, Simon and Croll's view (1980) to this criticism is that careful matching of teachers on such characteristics as age and sex, coupled with an element of randomisation , should provide samples which are representative of the general population.

There are other criticisms of systematic observation which are however less sustainable. One of these relates to the overconcern of systematic observation research with the provision of quantitative data to support generalizations. Another such criticism is that the category system reflects a mainly teacher-centered model of the classroom. It could be argued here that Flanders' reasons for concentrating on teacher behaviour is a conceptual one rather than a circumstantial one, that is, that the teacher is the prime source of influence in the classroom and his behaviour will determine the pupils' expectations in terms of control. Moreover, it could also be argued, as Mc Intyre does, that it is imperative to recognize the need for different observation systems for different kinds of classrooms setting.

In this particular connection, it is interesting to observe that to the extent that the Flanders system assumes the *"Chalk and talk"* paradigm and focuses mainly on the teacher, it is quite relevant for use in the Mauritian school context as it is at the moment. Despite the change of emphasis in the new Social Studies curriculum from teacher-centered role to more importance being given to students-centered teaching activities, a significant amount of teacher's talk and teacher directed activity is considered desirable in view of the prevailing examination consciousness.

The Flanders observation system was selected for use in this study for other equally good reasons. First, it is a useful and objective way of observing classroom behaviour and places few *"inferential demands"* on the observer. Second, it provides the precision of categorization needed for testing hypotheses about implementation at classroom level. It also generates numerical data suitable for statistical analysis; the quantifications are precise and generalizations are on a statistical basis. Finally, since the Flanders system is intended as a method for measuring the teaching style and technique adopted by the teacher, it was found quite appropriate for providing interesting comparative information of a general sort on teachers' style of teaching.

Flanders (1970)[14] conceptualizes the indirect behaviour patterns as the total body of the teacher's verbal acts which encourage students' participation in the classroom and thereby increase their freedom of action. In Flanders' view, if teachers are interested in turning out young adults capable of taking an active participant role in society, they must not perceive their own role as that of solely distributors of knowledge.

This basic tenet of Flanders correlates with the rationale of the Social Studies Project. In other words, the Flanders' method of interaction analysis is well suited to the measurement of the changing role relationship in the Social Studies classroom. The teacher's changing role is positively related to

(a) his acceptance of student feelings

(b) praise and encouragement of the students

(c) acceptance and use of student's ideas

(categories 1, 2, 3).

A teacher who makes extended use of categories 1, 2, 3 and who asks both narrow and broad questions (4) is one who is attempting to shift to learner-centred activities. The changing role relationship is also related to the amount and kind of pupils' talk (categories 8, 9). The Social Studies teacher is not only expected to encourage pupils' replies to his questions (category 8) but also to carry out some form of discussion and thereby to encourage the pupils to initiate their own ideas (category 9).

The use of Flanders' observation system in this study was thus solely concerned with measuring the extent to which teachers have changed their role in the classroom in accordance with the intentions of the innovation programme. The Flanders' system was supplemented by the Evans/Behrman Schedule of classroom observations as well as by unstructured observation. This two-pronged technique is recommended by Stubbs and Delamont (1976)[15] as striking the best balance between the available assessment methods.

The Evans and Behrman Schedule (1977)[16] involved a more adequate way of collecting implementation data than was allowed by confining

oneself to the Flanders' system alone. This schedule is based on the use of checklist items reflecting all the essential features of the new curriculum. Judgements about the implementation of each feature are made by the observer/s on the basis of an all-or-none measure: each item is scored 0 if not observed, and 1 if observed. Although such a measure applies particularly to the description of the implementation of the physical elements of a programme (for example the arrangements of materials), it has been used in this study to judge the implementation of all the main elements of the innovation. A fairly strict criterion for assigning a score is suggested by the designers of this schedule, who also point out, however, that variations in criteria might be appropriate for different items. Higher reliability is obtained when the individual items are unambiguous and when observers agree on the criteria being used.

The checklist which was constructed for this study (see Appendix III) was made up of twelve statements which express reasonable expectations of behaviour which should be evident in practice. In other words, all twelve behaviours should be displayed if the new programme was being well implemented. Ideas about these hehaviours have been made known to teachers and schools in Teachers' Guides, in the course of regular workshop sessions and in-service training. It can therefore be claimed that the items accurately represented the distinguishing features of the new curriculum, and therefore the schedule which was thus constructed, can be assured of content validity.

As mentioned earlier, in addition to these highly structured observations, unstructured observational recordings were also made at various points during the study. On each occasion that the school was visited, background information about the school environment buildings,

classroom organisation, resources, the current events in the classroom and so on were also recorded. This wide range of observations led to the collection of data about various aspects of school life which created the context for the implementation process, about the way the materials were adhered to, modified or changed, and about what actually happened inside classrooms using the innovative programme materials.

Sample of classes observed

Classroom observation was conducted in 69 schools which were sampled on a random stratified basis from the 134 secondary schools of Mauritius offering Social Studies at Form III level in 1979/80. The selected sample represented 52 per cent of the island's schools. It was felt that the choice of 69 schools and 80 teachers who represented 38 per cent of the island's Form III teacher population, might give the desired statistical precision. At the same time, however, the choice reflects the number of schools that could possibly be visited by the observer. The classrooms were sampled from the Form III classes in which Social Studies was being taught in its final phase and in which all the teachers had responded to the questionnaire. These classrooms provided an adequate representation of the various types of schools in the island, and of the various teacher sub-groups.

Data collection for classroom observed

The Flanders' observation system data was compiled during an intensive period, that is, the whole of the second term in 1980 (from June to August). Three periods of 35 to 40 minutes of class lesson were recorded for each teacher; two sets of observation were carried out by one observer and one set by the researcher.

The Evans/Behrman schedule was used to collect implementation data over almost a year (August 1979/1980). This checklist was used throughout the year by the researcher who undertook two class visits for each teacher. The third visit using this schedule with the same teacher was undertaken by one of the observers who were collecting Flanders' interaction analysis data simultaneously.

Sixteen observers were selected to carry out the classroom observation alongside the researcher. They were all Post Graduate Certificate in Education students who were graduates in Economics or History or Geography and who were following a part-time course in the methodology of Social Studies and Social Science teaching at the Mauritius Institute of Education. They were all teachers of experience (with over seven years of experience); twelve of them were full-time teachers with some acting as Heads of Department, four were Principals of Colleges and one was a lecturer at the College of Education. Their training course made them familiar with the philosophy, objectives and teaching methods of the Social Studies Project, which give them the great advantage of being able to detect the degree of implementation in the classroom.

It was decided that each observer should be attached to five teachers, so that these teachers would be able to get to know the observer well. This was essential if the teachers were to trust the observers sufficiently to allow them to observe their classrooms. It was also necessary to limit the visits of these Post Graduate Certificate in Education students to schools in their own locality. It was not an easy exercise to arrange the classroom visits, because in addition to the heavy pressure on the observers' already crowded timetables, there were other problems to cope with - for instance, the school's timetabling

arrangements did not always correlate with the observer's selected visiting days. However, as a result of co-operation on both sides, all sixteen observers could complete their visits to five teachers on two different occasions.

The attachment of each observer to five teachers during the period of data collection meant that it was important that checks should be made to ensure that the observation schedules were used in a standardized way. This question of establishing the reliability of inter-observation data will be taken up later.

Great care was taken to minimise the effects of observers on the usual pattern of classroom life as far as possible. The period of observation which extended over 3 months could give teachers and students the opportunity to become used to the observers' presence. The observers did not interact with teachers or children during the lessons, unless it was absolutely essential. At any rate, the entry into the classroom was made on an official basis, and therefore, this made sure that the observers were not identified with any group in the classroom or school setting. The observers were instructed not to provide any feedback at all to the teachers throughout the period of data collection and after its completion as well. Officially, the school Principals were asked to allow Post Graduate Certificate in Education students to visit one or two Form III classes to test an observational schedule as part of their training at the Institute. In all cases, the teachers had been informed by their Principal or by the observers themselves about the visits. No Principal refused access to their school and no teacher refused to be observed. However, the observers did have to spend some time establishing rapport

with the selected teachers and persuading them to be observed. This explained the importance of attaching each observer to 5 teachers, as mentioned earlier. In a few cases, the teachers observed were nervous about a colleague assessing their teaching style, or using a code unknown to them, and required guarantees of confidence of results.

Inter-rater agreement

As mentioned earlier, the attachment of each observer to five schools, meant that checks should be made to ensure that the schedules were used in a standardized way. The observers were checked for their coding *"reliability"* on three occasions - prior to data collection, during the course of data collection and after data collection. Prior to data collection, the training sessions which exposed all observers to common situations, helped to establish some reliability of data collection. The Post Graduate Certificate in Education students were trained in the use of F.I.A.C. categories on eight different video-taped teaching situations. All the tapes observed by the students were coded. Where disagreements in coding occurred, the tape was replayed and the differences in coding were thus resolved after discussion.

To prevent significant variation from observer to observer, the researcher was used as a kind of *"calibrator"* during the course of data collection. This also ensured that the schedules were used by pairs of observers. The researcher observed 50 of the 80 teachers seen by the P.G.C.E. students once during the period of data collection so as to cross-check the coding of the 16 observers. The remaining 30 teachers had already been seen at work by the researcher when data-

gathering for the Evans/Behrman schedule started in August 1979. Since the P.G.C.E. students were collecting their observation data while attending their training course at the Institute, it meant that regular meetings could be arranged to discuss their progress and problems in the handling of the schedules.

Possible differences in the actual coding practices of the 16 observers when they were in the field were also examined after the field work was over. The observers' use of each of the F.I.A.C. codes in the analysis of classroom interaction was considered prior to their plotting the categories of behaviour in a 10 x 10 matrix.

The subjectivity of the observers was thus minimised as a result of these checks. Furthermore, the view can be advanced that the structured nature or coding system of F.I.A.C. itself ensures a certain reliability of the data. The few categories of F.I.A.C., their precise definition and the fact that not much inference is required in classifying the observed data - all these allow for reliability of the data. One, perhaps, can go as far as pointing out that the time-interval observation specified in Flanders's system also contributes to observer reliability, *"because observers readily adopt a rhythm and habitually watch for the prescribed interval of time with surprisingly little variance"* (Weick, 1968)[17].

Finally, to establish a last check on inter-observation agreement, a reliability coefficient was calculated for each of the categories of F.I.A.C. The product-moment coefficient was used as a measure of reliability, and the coefficient thus yielded was quite high as will be discussed later.

D. *Interviews with Staff*

One phase of data collection which has lasted over an extensive period (January 1980 - December 1981) was concerned with a series of highly-structured interviews with staff (N = 20). This structured framework for questioning was based upon the model of Gross et al (1971). After the teacher questionnaire survey, it became an effective tool helping the investigation to identify the dimensions of certain factors of implementation correctly.

This interview covered a wide range of aspects ranging from such basic data as teachers' length of experience with the Project to the clarity of the Project's objectives, the facilities and support available for the staff over the years, the problems faced over the years in the implementation of the Project materials. The interviews concluded with teachers' views on the future of the Project.

One of the reasons in using the interviews was that it would perhaps yield more valid information on some of the more sensitive issues mentioned earlier. At any rate, the interview was more flexible than the Questionnaire and permitted the investigator to pursue leads that appeared fruitful. The interviews were mainly used,however, to provide the bulk of the data dealing with patterns influencing the implementation process over time. Moreover, the fact that the same format of structured interviews was used during the first implementation study of the Project and the current investigation, is a weighty factor when comparability between sets of data at two different points in time is important.

This study made every possible effort to keep response errors under control. The interviews were standardized, meaning that a

schedule of questions were asked in more or less the same wording and question order. The reason for this structured interview was based on the desire to have all respondents responding to the same research instrument. However, it was also recognised that the population to which the interview schedule was administered was not relatively homogeneous. Therefore, slight changes in question wording or the use of probing were also considered during the interviews to increase respondent motivation to communication. Indeed one great advantage of this structured interview is that strict comparability in design could be combined with interactive flexibility in administration.

Furthermore, in an attempt to attain standardization in the recording of answers and efficiency in the use of interview, the researcher conducted all the interviews herself. Every effort was made to avoid the interviewer bias as far as was practicable. Thus no move was made to influence the answers that were given or to communicate the biasing influence of the interviewer's opinions to the respondents. Similarly, the interviewer did her best to avoid bias resulting from her expectations of the respondents' views and behaviour. Answers from the respondents which appeared doubtful or marginal, were recorded as they were given; no attempt was made to re-interpret them later in the light of the answers expected from types of respondents. In cases where the respondents were not always articulate, the interviewer repeated what she was recording.

On the other hand, the investigator cannot guarantee that there were no errors or biases arising from respondents. In spite of the steps taken to conduct the interview in a free, relaxing atmosphere so that the respondents were not put off by the investigator's personality or presence, there was the ever-present risk that errors could

have arisen as a result of a respondent's overstating his opinions or giving a false picture of his attitudes to the problem. It was also evident during the interview that some of the respondents had a slight problem of *"memory decay"* with the time elapsed since the introduction of the Project.

Quite apart from the distortion that is inherent in the method itself, it was also recognised that the interview as a research technique was costly in time and effort. The interview was designed to last for about one hour a period equivalent to almost two lessons. The interviews were all conducted at the Institute of Education so as to ensure that the respondents were in a position to devote a considerable amount of uninterrupted time to the interview.

The teachers involved in the interviews were all drawn up from the group who had responded to the questionnaire and who were observed in the classroom. As mentioned earlier, the interviews were recorded on the schedule as they were given; no attempt was made to gather the interview material on audio-cassettes, since it was realized that the transcription of interviews from cassettes to print was a very lengthy and painstaking process.

In addition to the main series of interviews, a number of other interviews were held with other staff members, head teachers, students, and inspectors at various points in the study. Some of these were complementary to the main series, while others related to specific problems such as the problem of handling and assessing value and attitude issues at school, the problem of adequately preparing students for the Form V examinations in separate subjects and so on.

E. *The Standardized Test*

The standardized test was used to measure the important outcomes of the new programme, and to give an approximate picture of student achievement. It aimed at testing the specified objectives and the content of the new curriculum, and therefore should be quite sensitive to changes in pupils' knowledge of that content.

The standardized test has much to offer in the measurement of curriculum implementation. The design of the study is sufficiently strong to establish the link between the standardized test and the other measures of implementation used in this investigation, in particular the Teachers' and Pupils' Questionnaires:

(i) the samples of classes and teachers are identical

(ii) the same areas of interest (the importance of the Project objectives) have been covered in these measurements.

The selection of schools taking part in that test was made to correspond with the sample of schools and classes selected for the Pupils' Questionnaire; 40 such schools were selected. The number of pupils thus involved was around 5 000 but only those pupils (N = 1670) who have responded to the Questionnaire, will be considered here. The choice of a standardized test as a measure of implementation in this study was governed largely by the fact that the researcher could use her experience as Chief Examiner in Social Studies in the Form III National examination. The evaluation of student achievement in all the curriculum innovation projects at the end of Form III is a prime concern of the Institute of Education. This Institute will shortly conduct the national examination at this level in close collaboration

with the Ministry of Education and Cultural Affairs. Staff of this Institute have been appointed Chief Examiners in particular subject areas. The Chief Examiner has, among other responsibilities, the sole responsibility for the setting of finalquestion papers in accordance with the syllabus and examination requirements. She is also the chairman of the Social Studies Advisory Committee which makes suggestions for the review of the syllabus and type of examination paper. The task of spelling out the Form III curriculum framework into a detailed examination syllabus has been the responsibility of the Chief Examiner. Finally, the latter is also a member of the Junior Secondary Education Examination Committee which is the professional authority for the conduct of the particular examination.

The standardized test which had been developed and improved since 1978 was, in fact, the third trial version of the national examination carried out by the Institute in selected schools. The basis for item construction of the test was the new Social Studies curriculum which is being implemented in all the schools of the island. Content validity for all test items is thus ensured.

Since the test complied with the stated objectives and rationale of the new programme, construct validity can also be claimed.

The objectives which were measured in the test were also submitted to the teachers and pupils for ranking in order of priorities. It would be very tempting to correlate the output of the pupils with the implementation strategy chosen and executed by the teacher. The hypothesis could be advanced that pupils taught by high implementers are more successful than others in achieving high scores across the main areas of the Project's objectives.

Moreover, the issue of the relationships between teacher behaviour and gains in student achievement is one which has in no way, yet, been resolved. Indeed, the prediction of pupils' progress from teaching behaviour has been a very controversial aspect of educational research so far. It has been one of *"the most frustrating experience"* (Jungwirth and Tamir, 1973)[18] of research activity for many years, one of its most *"unrewarding fields"* (Flanders, 1969).

Some of the studies on teacher effectiveness, especially those based on direct observation of teachers, have assumed that characteristics of teachers and teaching acts are related to educational outcomes of classroom teaching. This is the stance taken, for instance, by Rosenshine and Berliner (1978)[19]. It is true that in his review of classroom interaction studies, Rosenshine (1971) was hesitant to conclude that characteristics such as teacher praise, teacher acceptance and use of student ideas, and teacher questioning generally have a positive relationship to student gains. This hesitation was due partly to the fact that only half of the reviewed studies showed statistically significantly positive differences, and partly to the fact that he was drawing inferences from a set of findings from different studies.

In 1978, however, Rosenshine and Berliner state that a continued assessment of the research from 1971 to 1978, shows that of all the variables studied, the only ones which emerge as significant in terms of pupil achievement are

(a) the amount of content covered

(b) the amount of time attention is engaged.

Together these two are called *"academic engaged time"*. However,

Rosenshine does not state the length of time and the conditions in which the teachers of his experiment have been working.

Other researchers have disputed this assumption about a relationship between pupils' progress and teaching behaviour. Thus Bennett (1976)[20] has argued that the

> *"superior performance of pupils taught by formal teachers was due to the fact that pupils in these classes engaged in work related activity more frequently, while pupils in informal classes engaged in the lowest amounts of such activity."*

One of the most recent reviews of the subject (Galton and Simon, 1980) has tried to bring evidence to support the theory that teaching behaviour does directly influence pupil achievement. On the basis of their classroom observation data (ORACLE) these authors claim that teachers who more often involved their pupils in more activities of the discovery type, were more successful than teachers using traditional method. Galton and Simon describe their study as the *"glass box"* model of research into teacher effectiveness, which contrasts with the *"black box"* model used in the studies of Barker Lunn (1970) or Bennett (1976) who used self-reporting questionnaires.

Thus, with this issue still unsolved and with research constantly assessing the effectiveness of one teaching model over another, it is recognized that the assessment of outcomes in relation to the actual behaviour of the observed in the classroom may not be a fair test. However, as explained earlier the present study will attempt to arrive at some correlate of pupil achievement. It will use classroom observation as a basis for establishing categories of implementers, who may vary widely in their implementation of the Project's objectives. Differences between pupils' scores across the main areas of the

Project's objectives could thus be examined to see whether pupils of the high implementers' group score higher than those taught by the other categories of implementers.

F. *Existing Records and Documents*

Much data on the Social Studies Project are routinely accumulated by the Social Studies Department of the Mauritius Institute of Education. There are records of written feedback from teachers, of workshops which are regularly held for the teachers, of occasional seminars with Principals and Inspectors; some of these seminars have been partly tape-recorded. Records of Social Studies teachers and students on practice who have been observed, are regularly maintained; some of these are video-recorded. There are also evaluation reports of the standardized tests carried out in schools at various levels by the Department.

It is recognised, however, that such records are unreliable. In each case, the researcher did not control the process of data collection. It is not always easy to determine what population the sources of data represent; for instance, the Principals present at a seminar are not necessarily typical of the population in general.

On the other hand, these data can be used to interpret the results of statistical analyses. Used in conjunction with the questionnaire, interview and observation data, they can provide valuable information on the level of programme implementation.

G. *Data Analysis*

A more complete description of the methods of data analysis used in this study is given in Chapters III to VII to help with the interpretation of the results, and in the Statistical Appendix. Here, a very brief outline only is given.

The first stage of the analysis in this study was concerned with descriptive statistics, that is, describing the features of the aggregate of each survey carried out. This univariate analysis included frequency distribution (for example of demographic variables, of categories of interaction analysis) and measures of central tendency. In reporting on the nature of the distribution of each variable, both tables and numerical summaries or sometimes histograms have been used.

The analysis also entailed the examination of the relationships between variables. These relationships have been examined by certain types of correlation and association indices. These indices were, of course, subject to the level of measurement of each variable. The data available in this study included:

(a) nominal data consisting of the frequency, or the percentage of individuals or of classroom behaviour in two or more categories.

(b) ordinal data consisting of data arranged in ranks.

(c) data in the forms of scores of pupils in a standardized test.

These types of data gave rise to particular methods of statistical analysis. Thus for data at nominal level, crosstabulation

statistics (for example, chi-square tests) were used; for ordinal data, the Spearman rank correlation coefficient (rho) was considered the most appropriate method for assessing correlation. Because the bulk of the data collected in this study belong to the nominal and ordinal level of measurement, non-parametric tests were used mostly. Moreover, it was also found that the other assumptions underlying the use of parametric tests for example the population distribution, were not always met in the data under analysis. It is true that

> *"assumptions about distribution or level of measurement of the variables are so often violated (often with justificable reasons) during the process of data analysis that their utility is questionable"*
>
> (Nie et al, 1975)[21]

However, non-parametric tests were considered to be as useful as parametric tests in this study. They were found to be capable of matching the sophistication of parametric tests in the process of categorization and labelling. Following Siegel's[22] concept of power efficiency it can be also stated that non-parametric tests can retain the same power as parametric tests to reject null hypotheses.

> *"We can avoid having to meet some of the assumption of the most powerful tests without losing power by simply choosing a different test and drawing a larger sample size".*

The enlargement of the sample size, according to Siegel, enables a test to reject H_0 when it is false, and at the same time avoids having to make assumptions about normality and equality of variances. This study which has selected the census population as well as large samples of teachers and pupils can, therefore, claims the power-efficiency of its tests of statistical significance.

In testing for statistical difference, the choice of method of data analysis was constrained not only by the type of data available, but also by the types of hypothesis used in this study. The types of hypothesis examined in this causal study were those relating to the association and correlation between variables.

Indices of association between nominal variables were based on the chi-square test results. Since the null hypothesis in the chi-square test was cautiously kept non-directional and was tested by a two tailed significance test, a large chi-square value was needed to reject the null hypothesis at a particular level. Correlation coefficients were also calculated to express the strength of the relationship between two variables. In situations where the data were in the form of ranks (for example, the ranking of objectives) the appropriateness of the Spearman rank order correlation was easy to decide. The Kendal coefficient of concordance (w) was employed to measure the extent of association among several sets of rankings within a particular group. It was found useful in determining the agreement among the same group.

The concept of product - moment correlation was applied to data (for example, inter-observer agreement) which were acceptably normal in distribution. Another parametric statistical test was used in that study, namely the analysis of variance. The latter was used for instance to compare the performance achieved by pupils of three different categories of implementers in a standardized test. This technique was used particularly to test whether there was any difference in the achievement of four clusters of objectives among pupils taught by the three levels of implementers. Since the problem examined the effect of the level of implementation on the achievement of objectives

and nothing else, one-way analysis of variance was used.

The test of linearity (linear trend test) was used as part of the one-way analysis of variance procedure to test whether the relationship between a dependent variable (for example, pupils' perception) and an independent variable (for example, level of implementers) was solely a linear relationship.

Factor analysis was used to summarize the great mass of classroom observation data in terms of a smaller number of factors in an attempt to classify teachers into categories of implementers. The varimax technique of factor analysis was used, and the *"rotated solution"* was adopted. A more detailed description of this method of analysis is given in Chapter IV.

Finally, the use of cluster analysis must also be noted; the main purpose of clustering was to corroborate the results of data-grouping by other techniques, and to serve particularly as a display function for these data by providing a tree diagram and a summary of the clusters formed. The technique used was the hierarchical technique, in particular, the single linkage method. Groups were fused according to the distance between their nearest members, the groups with the smallest distance being fused.

To conclude, the complexities of some of the collected data (for example, observation data, perceptions of teachers' implementation strategy by pupils taught by three levels of implementers, standardized test scores in the main areas of objectives) make any simple and straightforward statistical analysis almost impossible. The fact coupled with the availability of data on three levels of measurement, makes it possible for different types of analysis to be performed.

These make different statistical assumptions so that the mutual support which they give each other, may give much reality to the final conclusions.

The bulk of the data of this study was analysed by sub-programmes of SPSS[23] and BMDP[24] computer packages. No computer facilities were available at the Mauritius Institute of Education at the time that this study was undertaken. An attempt was made at first to use the computer facilities of the Mauritius Sugar Industry Research Institute. However, the problem of programme development for the analysis of the data of this study proved to be a very lengthy task. Finally, existing programmes at the University of London Computer Centre and the Manchester School of Education were used for the data analysis of this study.

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CHAPTER III

RESULTS 1: TEACHER KNOWLEDGE AND PERCEPTIONS OF THE INNOVATION

In this chapter, consideration will be paid to the first four questions stated in Chapter I and which are as follows:

1. *Do current structural changes (for example, timetabling arrangements, articulation of curricula ...) favour effective use of the Project?*

2. *To what extent are teachers aware of the Project's objectives? What are their preferences and expectations regarding these objectives.*

3. *To what extent do teachers comprehend the philosophy and rationale of the Project and its outcomes?*

4. *How do the teachers perceive their interest in and attitude towards the Project?*

The main questions may be formulated in the form of hypotheses, and the answer to the latter may be predicted on both theoretical and empirical grounds. The findings obtained from empirical evidence may be checked against the *"theoretical"* prediction. From a theoretical point of view, the answers to the broad questions that are put forward, would appear to be fairly plain. With regard to the first question, the implementation of the innovation should be optimal when current structural changes are favourable to the use of the Project. Clearly, changes such as the appropriate number of periods allotted to the new curriculum, the articulation of the new programme with the upper

secondary Forms curricula dominated by the requirement of external examinations, the establishment of a new examination based on the innovation programme, and so on, would lead to a more effective use of the Project. When such changes are insufficient or lacking, one might expect a poor implementation of the new programme.

Regarding the question about the extent to which teachers are aware of the Project's objectives, it would seem likely that teachers trained in the use of the innovation's ideas and materials, would be more familiar with the types of objectives which are more desirable to implement. It should be possible to obtain some kind of empirical evidence to this prediction by comparing the ranking of objectives by the three groups of teachers classified on the basis of their qualifications. However, it is recognised that other factors like sex and teaching experience might bring alterations in this general pattern of prediction.

Regarding the teachers' ranking of their priorities and expectations, it is expected that teachers on the whole should be fully aware of their classroom problems and the difficulty of achieving certain objectives which they consider most important in their list of priorities. In other words, it is not expected that teachers' priorities should be the same as their expectations.

The third question which deals with the extent to which teachers comprehend the philosophy and rationale of the Project, should bring forth the superiority of the trained and qualified teachers over the other groups. With regard to the teachers' perceptions of the Project's outcomes, a similar prediction can be made.

Finally, insofar as teachers' attitudes towards the Project are concerned, it is expected that varied factors would influence teachers' reactions to the innovation. For instance, the familiarity of teachers with the new curriculum, their systematic training in the use of the programme or the congruence of the innovation with the existing system of examinations should produce positive reactions in teachers. On the other hand, the difficulty of translating the Project's ideas in the reality of the classroom, its dissonance with the existing system of examinations and so on, should lead to decidedly negative reactions. As far as the nature of this investigation would permit, some of these factors will be considered in this section.

Bearing in mind, then, the limitations of the teacher Questionnaire data and the complexity of the phenomenon of implementation, in general it could be predicted that:

1. *The Project would be implemented more effectively when appropriate structural changes have occurred.*
2. *Qualified and trained teachers would be expected to be more aware of the Project's objectives than the unqualified group.*
3. *There would be a disparity between teachers' priorities and expectations in their ranking of objectives.*
4. *The philosophy and rationale of the Project would be more easily understood by qualified teachers than by the unqualified group.*
5. *Teachers would have more favourable attitudes to the new programme if they were well trained and if they were no constraints in their innovative efforts.*

The Method of Analysis

The object of the analysis is to chart the extent and nature of the causal dependence of the variables listed above. The main methods of analysis used in this section are chi-square tests and Spearman rank order correlation. Kendall's coefficient of concordance (W) was computed in one particular instance; a full description of this test is given in the Statistical Appendix. The Binomial Test was used to test the validity of categories used for classifying open-ended responses. Finally Cluster analysis was used as a descriptive technique to search for groupings in the teacher data; the procedure that was utilized for grouping was the minimum distance (single linkage).

The computer analysis of the teacher data was undertaken partly at the Mauritius Sugar Industry Research Institute and partly at the University of London Computer Centre. In the latter case, the SPSS programme was used.

Distribution replies

The results of the survey as regards responses of the various sub-groups of teachers are summarised in table A1.

Table A1: Teacher Questionnaire: Distribution Replies

Total No. of replies (N = 177)

	Percentage of replies
SEX	
Males	48.6
Females	51.4

	Males	*Females*	*Total*
School Types			
State Schools	0.6	5.1	5.6
Junior Secondary Schools	9.0	2.8	11.9
Private Schools	39.0	43.5	82.5
School Environment			
Urban	27.1	33.9	61.0
Rural	21.5	17.5	39.0
Years of Teaching Experience			
0 - 1	2.8	3.4	6.2
1 - 5	26.6	24.3	50.8
5 - 10	9.6	13.0	22.6
10 - 15	6.2	6.2	12.4
Over 15	3.4	4.5	7.9
Years of Service in Present School			
0 - 1	5.6	5.1	10.7
1 - 3	19.2	17.5	36.7
4 - 6	14.7	15.8	30.5
7 - 12	5.1	9.0	14.1
Over 12	4.0	4.0	7.9
Qualifications			
School Certificate (O. Level)	19.8	17.5	37.3
Higher School Certificate (A. Level)	13.0	14.1	27.1
Higher School Certificate (A. Level) + Diploma in Education	10.7	7.9	18.6
Degree	5.1	7.3	12.4
Degree + P.G.C.E.	0.0	4.0	4.0
Higher Degree	0.0	0.6	0.6
Subjects Studied			
Geography	4.5	19.2	*23.7
History	23.2	19.8	42.9
Economics	20.3	5.6	26.0
Sociology	2.8	2.3	5.1
Others (e.g. English, French, Mathematics)	35.6	44.6	80.2
Subjects Taught			
Social Studies only	13.6	15.3	*28.8
Social Studies + Geography	0.6	5.6	5.6
Social Studies + History	4.0	1.7	5.6
Social Studies + Economics	4.5	1.1	5.6
Social Studies + Sociology	0.6	0.0	0.6
Social Studies + Others	25.4	28.2	53.7

*In certain items, the sum does not in general equal 100 per cent.

The reason is that some teachers belong to more than one category.

Sex Differences

First the relationships between sex and the other characteristics were considered. The chi-square tests did not throw up statistically significant pattern of sex differences, except in the case of school types. The values are tabulated below:

Table A2: Sex differences

Characteristics	*Chi-square value*	*Inference*
Response to survey	$\chi^2 = .295$ $d.f = 1$	*n.s.*
School type	$\chi^2 = 7.01$ $d.f = 2$	*
School Environment	$\chi^2 = .853$ $d.f = 1$	*n.s.*
Teaching Experience	$\chi^2 = 1.31$ $d.f = 4$	*n.s.*
Qualifications	$\chi^2 = 6.40$ $d.f = 5$	*n.s.*
Subjects studied	$\chi^2 = 1.48$ $d.f = 1$	*n.s.*
Subjects taught	$\chi^2 = 7.42$ $d.f = 5$	*n.s.*
Years of service	$\chi^2 = .807$ $d.f = 4$	*n.s.*

n.s. : not significant

* : significant at the 5 per cent level

Teacher Perceptions of the Importance of Objectives

Regarding the teachers' attitudes to the Project's objectives, the question asked was: Were the Social Studies teachers aware of the objectives the Project strives to attain? A list of nine teaching objectives in Social Studies was given to the teachers for ranking in their relative importance. These statements were adapted from the Project's documents, teachers' guides and pupils' materials. The list of objectives was thus not completely foreign to the teachers, nor were the objectives stated in words which were too complex for them to understand. All the Project's materials were, in fact, prefaced with an imposing array of of objectives. Yet it was recognised that, in the last analysis, it will be the teachers who will have to implement these objectives according to their predilections or partialities.

The following list of nine teaching objectives was administered to the subjects:

A. *The ability to recall basic facts about man and society.*

B. *The ability to develop ideas, concepts and generalisations.*

C. *The ability to find information through various sources.*

D. *The ability to interpret maps, pictures, charts, cartoons, graphs and other visuals.*

E. *The ability to work and participate within small groups.*

F. *The ability to develop empathy or tolerance for cultures and societies different from one's own.*

G. *The ability to be objective and open-minded in discussion and in evaluating information.*

H. *The ability to think about and clarify one's personal beliefs and values.*

I. *The ability to accept responsibility in a changing society.*

Table A3 below shows the results of chi-square tests applied to the ranking of individual objectives among the various sub-groups of sex, years of teaching experience, qualifications and subjects studied; more detailed results of this test and of the priorities given to each objective by each group are shown in Appendix II (Tables Ia to If).

Table A3: Ranking of objectives by teacher sub-groups

	Objectives								
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*
Sex: (Male/Female)	*n.s*	*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*
Years of Teaching Experience <5 & >5	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*
Qualifications									
(i) S.C./H.S.C. without Dip in Ed./H.S.C. + Dip in Ed.	***	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*
(ii) Non-Graduates/ Graduates	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*
(iii) Untrained/trained (Holders of Dip in Ed. and P.G.C.E.)	***	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*
Subject Studied Social Sciences/ Non Social Science	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*	*n.s*

n.s not significant
* significant at 5 per cent level
*** significant at .01 per cent level

The results showed significant differences in the ranking of objective A (the ability to recall facts) by unqualified teachers (holders of S.C. or H.S.C.) and the qualified ones (H.S.C. plus a Diploma in Education holders). Striking differences also appeared between the untrained teachers and those holding a professional qualification and trained at the Mauritius Institute of Education, regarding the ranking of the same objective.

The most powerful teacher attribute in this analysis was undoubtedly teacher training. The qualified and Institute-trained teachers know actually how to implement objectives other than these relating to the ability to recall facts. They were more conscious of the de-emphasis on the recall of facts in Social Studies education. Judging by the high priority given to recall of facts by unqualified and untrained teachers, it would appear that the latter were not aware of the special emphasis of the Project on certain objectives. The fact that non-graduates (including the Institute-trained Diplomates) and graduates did not reveal any statistically significant difference, would seem to lend support to the conclusion that teacher-training was essential for the development of the right attitudes towards the Project's objectives.

The only statistically significant difference tbetween male and female teachers was in the ranking of objectives B (the development of ideas, concepts and generalizations). The implication of this difference is that male teachers seemed to be more willing than female teachers to teach Social Studies by concepts.

With the exception of objective A, then, there were no striking differences of opinion in the ranking of the other objectives by the various sub-groups. All the sub-groups gave *"top"* ranking to objectives B, F, G, and I and *"bottom"* ranking to objectives C, D, E and H. The latter relate to the development of research skills, social skills and personal values respectively, and surprisingly they were given low priorities even by the Diploma holders, and this in spite of their just having a long-term training course in which these objectives were given special emphasis. Presumably, in so far as "the development of

personal values" objective is concerned, teachers' ideas of how to implement this objective had not yet crystallized, and the difficulty of doing so precluded an allotment of higher priorities. On the other hand, the same teachers gave relatively high priorities to "the development of tolerance", to "the ability to accept others' views" and "to accept responsibility in a changing society". This contradictory opinion would bear out the general feeling among educators that teachers pay lip-service to the values and attitudes objective while there is a general playing down of such objectives in the classroom. However, it must be noted that these objectives were at least recognised as formally desirable.

On the other hand, some objectives were overlooked by teachers namely "the ability to look for various sources of information", "the ability to interpret graphic data", "the ability to work with others and participate in groups". The low priorities given to such objectives would seem to reveal the predominance given in the classroom to the coverage of content-matter.

Since there was almost total unanimity of opinion among the various sub-groups on the ranking of objectives B to I (with the exception of objective A), an attempt was made to measure the degree of agreement among members of the same group in the ranking of the nine objectives. Kendall's coefficient of concordance (W) was computed on the concordance of the ranking of objectives by the Institute trained Diploma Holders. The procedure for this test is explained in some details in Appendix I. The value of W which was obtained, was .273 and the significance of this value was tested by using the formula $\chi^2 = \kappa (N - 1) W$. It was found that $\chi^2 \geq 72.07$ with $d.f = 8$, has

probability of occurence under H_o of $p < .001$. It can be concluded with assurance that the agreement among the Diploma holders was higher than it would be by chance. The Diploma holders were ranking the objectives in exactly the same order. The result $W = .273$ may therefore be interpreted as meaning that members of this group were applying essentially the same standard in ranking the 9 objectives under study; their rankings were concordant, not by chance.

Teachers' Attitudes towards the Project's Philosophy

Teachers' attitudes towards the philosophy and rationale of an innovation project have often been put forward as a crucial factor influencing the degree of implementation., For example, Gross (1971). If teachers have to develop attitudes in students according to the curriculum's prescription, they themselves should have certain attitudes which would enable them to implement the strategies as set out in the Project. So this study has included teachers' attitudes as a variable in the implementation process.

A series of statements (Question 10 in the Questionnaire) was used to represent the main ideas of the Project's strategy. Five such ideas were identified, and for each idea two statements intended to be a positive and negative expression of the ideas were written. The positive statement reflected the Project's rationale and methodology. In responding to these 10 sub-items, teachers were asked to indicate their degree of agreement or disagreement with each on a five-point scale, ranging from "strongly agree" to "strongly disagree".

The method of scoring the attitudinal items was based on a Likert scaling procedure. The ratings were "scored" by assigning a value of

5 for strong endorsement of a favourable statement, 4 for agreement and so on. For unfavourable statements, the scoring was recoded by inverting the order of the weights, with strong endorsement then receiving one point.

One of the most serious arguments against Likert scales is their lack of reproducibility, that is, the same total score may be obtained in several ways, (Oppenheim 1966)[1] . Consequently two or more identical scores may have different meanings. It was, therefore, recognized that certain factors (for example, sex, years of teaching experience) which might influence a teacher's score on his position on the attitude scale, should also be considered. Another criticism of the Likert scale, namely, the lack of a zero point (Shaw and Wright, 1967)[2] should cause no concern here since the main interest of the analysis was in comparing the attitude scores of several sub-groups of teachers.

The results of the application of chi-square tests to the overall frequency distribution of scores among the sub-groups are shown in Table A4.

Table A4: Overall frequency distribution of scores among teacher sub-groups

Teacher characteristics	*Chi-square value*	*Inference*
Sex	$\chi^2 = 7.28$ $d.f. = 3$	*n.s.*
Years of teaching experience < 5 years > 5 years	$\chi^2 = 4.14$ $d.f = 3$	*n.s.*
Non-Diploma/Diploma holders	$\chi^2 = 20.547$ $d.f. = 2$	***
Diploma/Degree holders	$\chi^2 = 6.35$ $d.f. = 2$	*

Chi-square tests were also computed to find whether significant differences could be found in a number of items among the various sub-groups. The data were subjected to three successive analysis to find out key variables. Use was made first of multi-dimensional tables, then of 3 x 5 tables after subtraction of certain variables, and finally a further collapse of tables resulting in two marginal tables. Examples of these tables are found in tables 2(a), 2(b) in Appendix II. The final analysis showed that teachers' qualifications are the key factor which best predicts attitudes to the Project. The values are tabulated below:

Table A5: Frequency distribution of scores per item among teacher sub-groups

Sub-Items	*Males/ Females*	*Teaching Experience*	*Non-Diploma/ Diploma Holders*	*Diploma Holders/ Degree Holders*
1	*n.s*	*n.s*	*	+
2	*n.s*	*n.s*	* * *	* *
3	*	*n.s*	* * *	* *
4	*n.s*	*n.s*	* *	*n.s*
5	*	*n.s*	*n.s*	*n.s*
6	*n.s*	*n.s*	*n.s*	*n.s*
7	*n.s*	*	* *	*
8	*n.s*	*n.s*	* * *	*n.s*
9	*n.s*	*n.s*	*	*n.s*
10	*n.s*	*n.s*	*n.s*	+

n.s not significant + significant at 2 per cent level
* significant at 5 per cent level * * significant at 1 per cent level
* * * significant at .01 per cent level

On the whole, sex and teaching experience appear to be disappointing variables in predicting teacher attitudes. They were not found

to exert a highly significant influence on teacher attitudes. It is true there was significant association (at the .05 level) between sex and two attitude sub-items (3 and 5) and between teaching experience and one attitude sub-item (7), but generally speaking, these two variables had no effects on attitudes towards the Project's philosophy and methodology. This fits in with the previous finding on attitudes towards the Project's objectives.

On the other hand, the overall picture presented by the data in tables A4 and A5 is that there were high statistically significant differences between the unqualified group of School Certificate and Higher School Certificate teachers and the group of Institute-trained Diploma in Education holders. The latter were statistically different from the former in that they agreed almost unanimously with most of the positive expressions of the ideas of the Project's philosophy and strategy. The responses of the non-Diploma holders revealed reservations about many of the Project's ideas. The more highly favourable reactions of the Diplomates seemed to point to the fact that teacher-training in the use of the new curriculum materials was very important.

The statistical differences between the Diploma holders and the Degree holders as revealed in tables A4 and A5 show that Degree-holders did not necessarily have the most positive attitudes. This seemed to lend support to the conclusion that teacher-training is most essential for the development of the right attitudes towards the Project's philosophy and methodology. Teacher qualifications thus constituted an important variable in the assessment of attitudes.

An inter-correlation of the sub-items conforming Question 10 was applied to understand teachers' ratings of the positive and negative statements. By establishing and elucidating the relationship between each pair of positive and negative items, teachers would show their understanding of the Project's strategy. The rating given for a positive item should bear a logical relationship to the rating given for its negative counterpart. A "theoretical" perfect intercorrelation of items would be as follows: Items 1/8; 2/4; 3/7; 5/9; 6/10.

The Spearman (rho) rank-order correlation technique was applied to understand the inter-correlations of items first by the three separate groups of teacher qualifications, and then by the three groups combined together. The results of this computer analysis (using the SPSS programme) are shown in tables A6 and A7 respectively on the next page. They indicate that the possibility of predicting the rating of a teacher on one item, given the rating on another, was minimal. This implies a lack of consistency in rating by all three groups of teachers. The "theoretical" perfect inter-correlation was achieved only in the case of items 5/9 and 6/10. The Diploma in Education holders could identify the polarization in these two items, whereas both the unqualified group and the degree holders could establish relationship only in the case of items 6/10. The relatively better performance of the Diploma holders in the rating of the attitude items, could be due to their training in the use of the Project's materials. This would, then, provide further confirmation of the impact of teacher training on teachers' perceptions of the innovation.

Table A6: Intercorrelation of Attitude Sub-items by 3 Separate Qualification Groups (Using .001/.006 significance level)

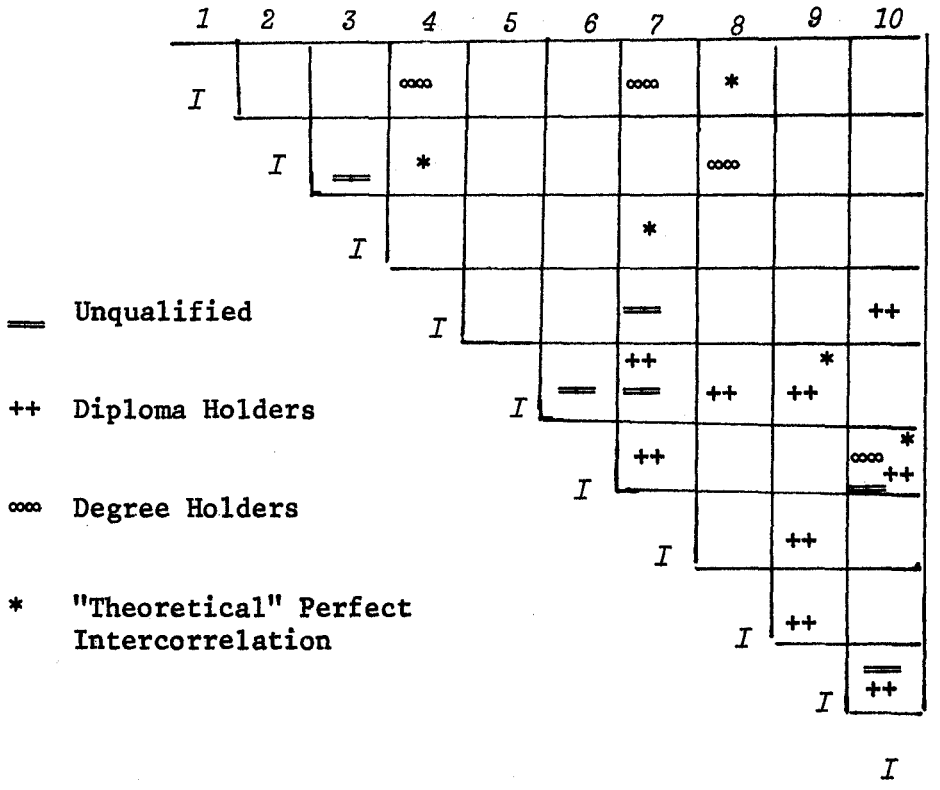
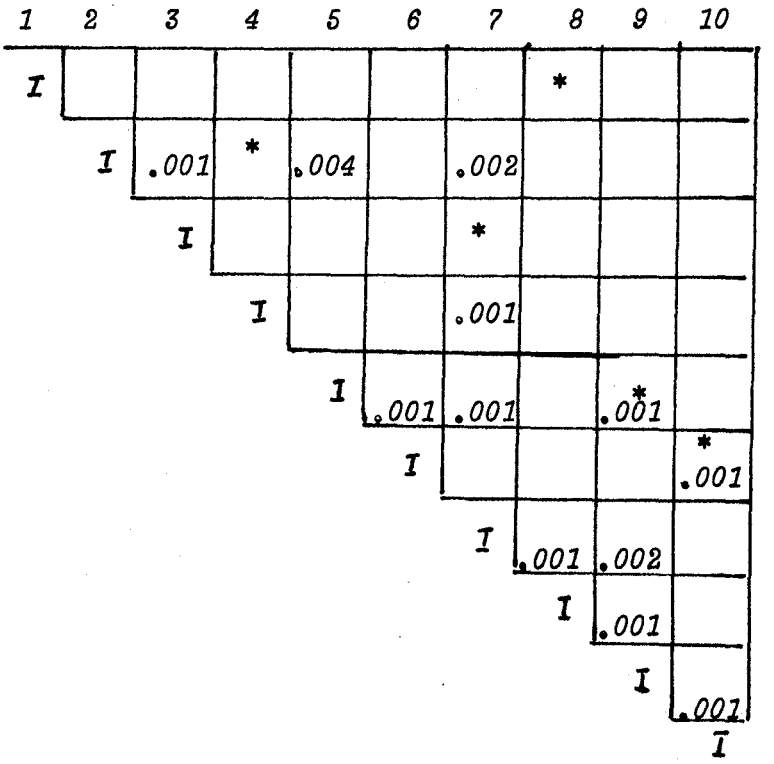


Table A7: Overall Correlation Matrix of Attitude Sub-Items (Combined Groups) (Using .001 to .006 significance level)

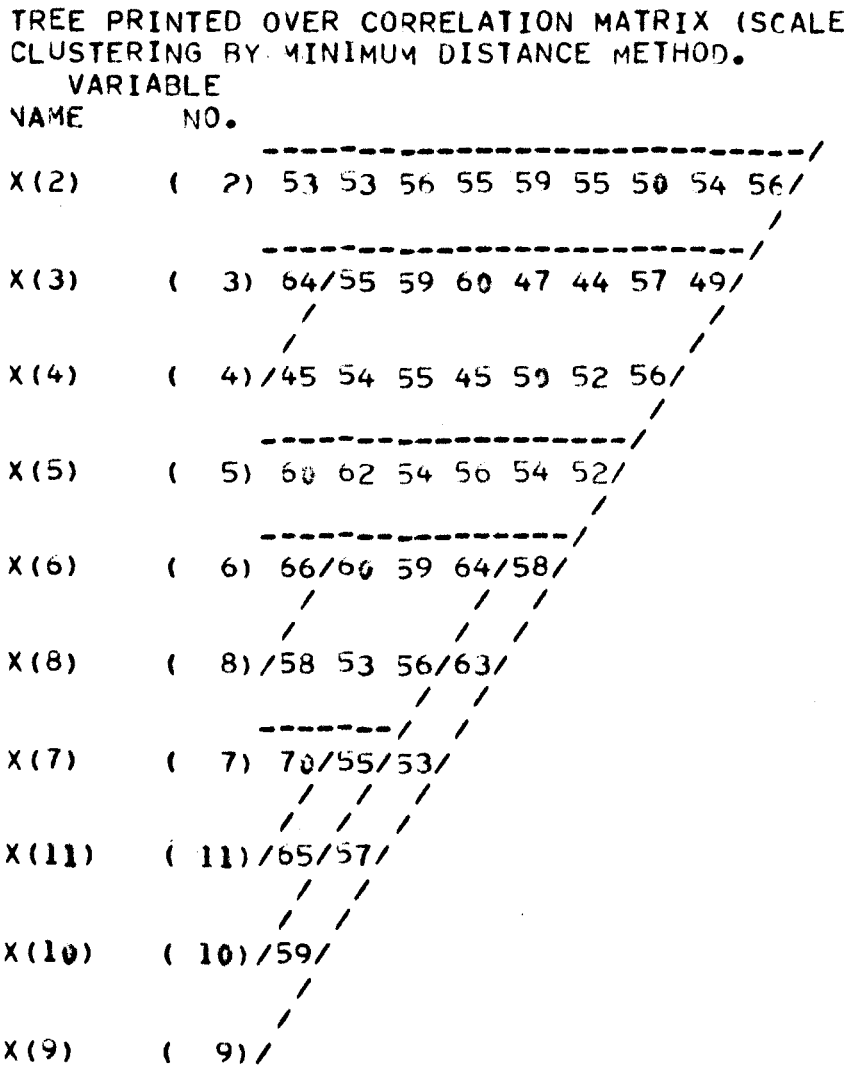


* "Theoretical" Perfect Intercorrelation

Cluster analysis was used on a corroborative basis alongside the Spearman (rho) correlation to find out the measure of association among the sub-items or variables. The computer programme that was used was the BMDP, in particular the PIM method. A brief account of the mechanics of this analysis is given in Appendix I.

The tree diagram in figure V below illustrates the sequence of clusters formed. The measure of similarity was the correlation between the variables or the absolute value of the correlation and the procedure for amalgamation was the minimum distance (single linkage).

Figure V: Cluster Tree



A brief explanation of the cluster tree on the previous page as made available by the PLU version (June 1980) of the programme, is as follows:

One cluster consists of variable X (7), the seventh variable listed in the tree. This cluster joins with the cluster below it consisting of the variable X (11). The new cluster is indicated on the tree by the intersection of the dashes beginning above variable X (7) with the slashes starting next to variable X (11).

This cluster joins with the cluster below it consisting of the variable X (10). The new cluster is indicated on the tree by the intersection of the dashes beginning above variable X (7) with the slashes started next to variable X (10) and so on. The cluster tree printed above and which is based on the data of the total sample of teachers shows the following main clusters.

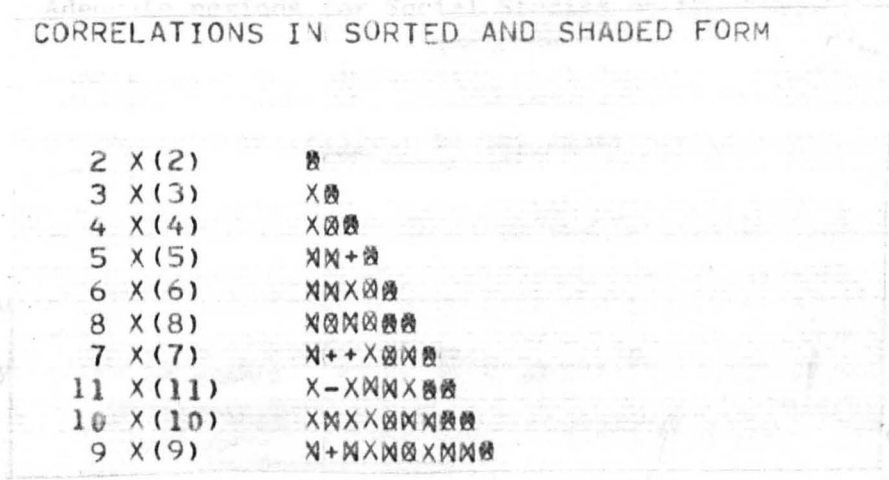
1. Variables 7/11 which are equivalent to Items 6/10
2. Variables 6/10 which are equivalent to Items 5/9
3. Variables 7/10 which are equivalent to Items 6/9
4. Variables 6/8 which are equivalent to Items 5/7
5. Variables 3/4 which are equivalent to Items 2/3

Only the first two reflect the "theoretical" perfect intercorrelation of items, namely items 6/10 and 5/9. The other clusters reveal the failure of teachers to establish the relationship between positive and negative items in their rating. The results of these clusters description thus corrobate with findings of the Spearman rank-order correlation techniques.

Cluster analysis was thus used essentially as a descriptive technique to search for groupings in the data and to establish the validity of Spearman (rho) results. No attempt was made to reexamine the data matrix as a means of discriminant analysis.

Figure VI illustrates the printing of correlation matrices in sorted and shaded form to display the clusters pictorially after rearranging the order of the variables according to the clusters.

Figure VI: Correlations in Sorted and Shaded Forms



Teachers' Perceptions of Implementation Factors

Question 11 in the questionnaire dealt with teachers' attitudes towards the facilitating and limiting factors of implementation. A five-point scale was used by the teacher to rate the influence of thirteen possible factors affecting the implementation of the Social Studies materials and ideas. Variables were scored 5 (highly facilitating) to 1 (most inhibiting). The thirteen factors teachers had to rate were as follows:

1. In-service courses/Workshop.
2. Classroom visits by Institute of Education Staff.

3. Commitment of teachers to the Project.

4. The use of the Project materials.

5. Provision of the Form III examinations related to the Project.

6. The discontinuity of the Social Studies syllabus beyond Form III.

7. Teacher's continuation of formal studies at the Institute of Education.

8. The Project's objectives.

9. Support from Principal and other colleagues at school.

10. Establishment of regional centres for workshops.

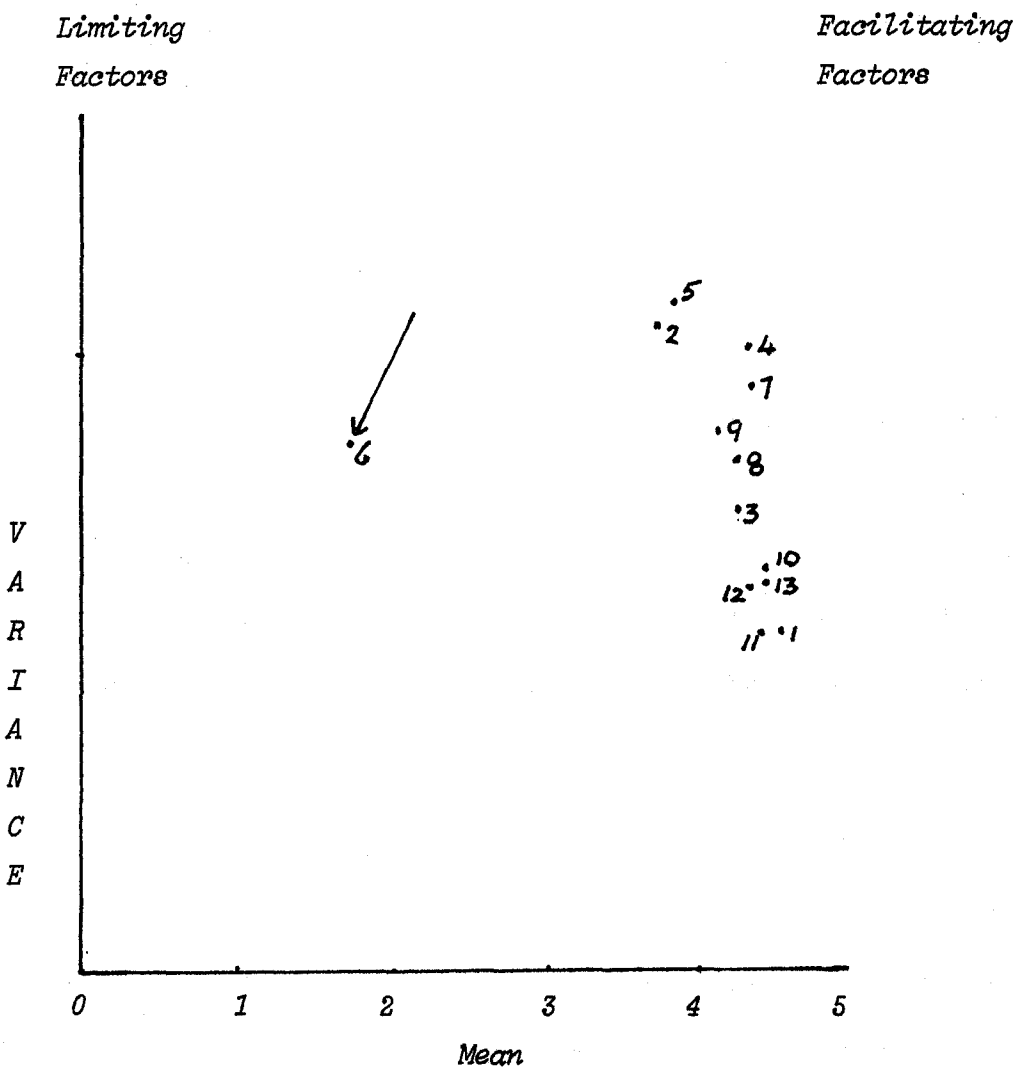
11. Adequate periods for Social Studies on the time table.

12. Stability of School Staff.

13. Planning of the Project by the Institute of Education.

In general teachers' anwers to this question were very homogeneous and the basic trend was towards the positive categorization of many of the factors as can be seen in the deviation to the left shown in figure VII on the next page. The figure makes it quite obvious that the trend towards the two positive categories (highly and moderately facilitating) was strongly marked while sub-item 6 was an "outlier" sub-item.

Figure VII: Plotting of overall mean and variance of responses to sub-items in Question 11



To find out whether factors could be identified which might be considered as facilitating or inhibiting of implementation, chi-square tests were applied to each sub-item against the rest. A 70 per cent response cut-off point in categories 4 and 5 was used. On the basis

of the emerging pattern, the following sub-items were grouped together:

1. Sub-items 1, 3, 4, 7, 8, 9, 10, 11, 12, 13.

2. Sub-items 2 and 5.

3. Sub-item 6 (with 80 per cent of response in categories 1 and 2).

The emerging pattern tallies with the results of the overall frequency count. The results of the chi-square tests and of the overall frequency count are illustrated in tables 3a and 3b - respectively in Appendix II. The first set of sub-items shows a strong rating trend towards categories 4 and 5. The third set is strongest in the lowest categories (1 and 2), while the second set of sub-items indicates a spread from high to low categories.

The results of this analysis show that the most inhibiting implementation factors were those relating to the discontinuity of the Project beyond Form III, followed by inadequate classroom visits by the staff of the Mauritius Institute of Education and the provision of the Form III national examinations based on the Project materials. All three factors relate to management outside school.

Spearman (rho) correlation was used on a corroborative basis alongside the chi-square tests. The overall correlation matrix in table A8 on page 131 shows strong relationships between the same set of sub-items as were revealed by the chi-square tests and the frequency count. The position of sub-item 6 as an "outlier" is quite obvious on both correlation matrices.

Chi-square tests were also computed to find out whether significant differences could be found in a number of items among the various sub-groups. The data were subjected to three successive analyses to

find out key variables. The results are shown in tables A9 on page 132. Details of the multi-dimensional tables are illustrated in tables 3c and 3d in Appendix II.

The results indicate a mutual interdependence of the variables in some of the sub-items, but professional qualifications in terms of the differences between the unqualified and Diploma Holders sub-groups, appeared to be the key variable in a number of items. The qualified groups (Diploma Holders and Degree Holders) were certainly more consistent in their rating than the unqualified group. Sex and years of teaching experience appeared to be insignificant variables. In the case of sub-item 6, however, an interesting finding is that the teachers of more than 5 years' teaching experience were more conscious of the impact of the discontinuity of the Project beyond Form III than those with less than five years' experience.

An inter-correlation of the sub-items constituting Question 11 was applied to understand the ratings of these statements by the 3 separate groups of teacher qualifications. Th values are tabulated in Table A10 on page 134.

With the exception of sub-item 6 which all three groups agreed had a negative correlation with the remaining sub-items, there was not a single case where all three groups together indicated mutual agreement in establishing relationships among items.

The cluster descriptions in Figures VIII and IX respectively reveal that it was, in fact, difficult to classify the sub-items into groups. The distance or similarity when cluster formed was the same among all sub-items. These figures are provided on page 133.

Table A8: Overall Correlation Matrix (Using .001 Significance level)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	I			.001					.001	.001	.001		
2		I			.001		.001						
3			I	.001				.001		.001	.001	.001	.001
4				I			.001		.001	.001	.001	.001	.001
5					I						.001		.001
6						I							
7							I	.001		.001			.001
8								I		.001			.001
9									I	.001	.001	.001	
10										I	.001	.001	.001
11											I	.001	.001
12												I	.001
13													I

Table A10: Inter-Correlation of Sub-items by 3 Qualification Groups (Separately) (Using .001 to .006 Significance level)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	I	=		=					=	++	∞	∞	=
2		I			=								=
3			I	=				=		=	++ =	=	++ =
4				I			=	=	=	=	=	=	=
5					I			=			∞	∞	=
6						I							
7							I			=		=	++ =
8								I	=	=		++	++
9									I		∞	∞	
10										I	++ =	=	++ =
11											I	∞ =	++ =
12												I	++ =
13													I

= Unqualified Group

++ Diploma Holders

∞ Degree Holders

Table A9: Variables affecting reaction to Implementation Factors

Sub-Items	1st Set of Analysis	2nd Set of Analysis	3rd Set of Analysis			
	Qualifications by rating of implementation factors, controlling for sex, school type, school environment, teaching experience.	*Qualifications (Unqualified, Diploma and Degree teachers) by rating of implementation factors.*	*Unqualified/ Diploma Holders*	*Diploma Holders/ Degree Holders*	*Sex*	*Teaching Experience*
1	n.s.	n.s.	*	n.s.	n.s.	n.s.
2	* M/Private/Rural/< 5 yrs	n.s.	**	n.s.	n.s.	n.s.
3	n.s.	n.s.	*	n.s.	n.s.	n.s.
4	* F/Private/Urban/> 5 yrs	n.s.	Just falls short of *	n.s.	n.s.	n.s.
5	* M/Private/Urban/< 5 yrs	n.s.	n.s.	n.s.	n.s.	n.s.
6	* F/Private/Urban/< 5 yrs	n.s.	n.s.	n.s.	n.s.	*
7	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
8	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
9	* F/Private/Urban/< 5 yrs	n.s.	+	n.s.	n.s.	n.s.
10	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
11	* F/Private/Urban/> 5 yrs	n.s.	n.s.	n.s.	n.s.	n.s.
12	* M/Private/Urban/< 5 yrs * F/Private/Urban/< 5 yrs	n.s.	*	n.s.	n.s.	n.s.
13	* M/Private/Urban/> 5 yrs	n.s.	n.s.	n.s.	n.s.	n.s.

n.s. Not significant

* Significant at the 5 per cent level

\+ Significant at the .2 per cent level

** Significant at the .1 per cent level

Figure XVIII

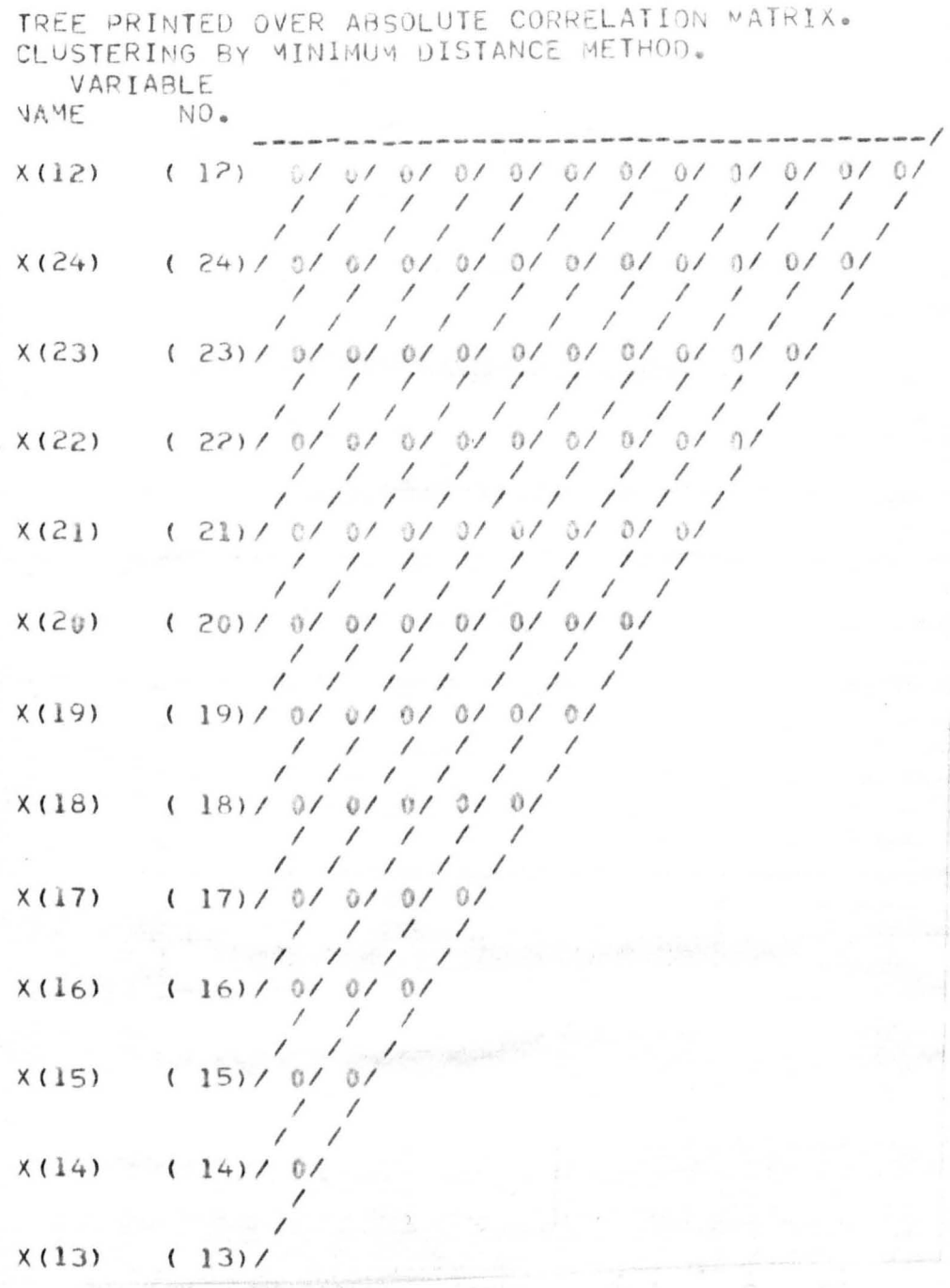
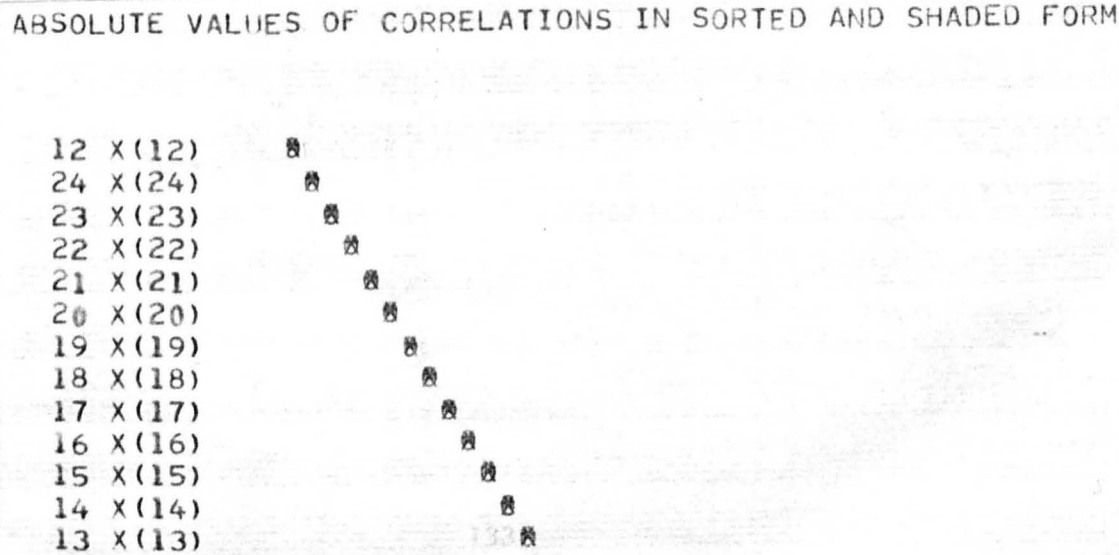


Figure IX



Teachers' Expectations of Objectives' Achievement

With the implementation of the Social Studies innovative programme, it could be that teachers have their own views about the achievement of objectives. They may find themselves in a position where they are forced to work for the achievement of certain objectives, the feasibility of which is doubtful to them, especially after confrontation with actual pupil achievement. The purpose of Question 12 was to procure data of teachers' expectations with regard to the feasibility of achievement of the nine objectives listed in Question 9. The second important purpose was to establish the relationship between the teachers' top priority and top expectation.

In the analysis of these data, therefore, only objectives appearing in the uppermost rank were taken into account. The relationship between teachers' top priority and top expectation was analyzed by means of a rank-order correlation coefficient.

The results are given in Table A11 below.

Table A11: Correlating Teacher Top Priority and Top Expectation of Objective

Objectives	*Top Priority*	*Top Expectation*	*Priority Rank*	*Expectation Rank*	*D*	D^2
	%	%				
A	12	11	4	4	0	0
B	29	19	1	2	1	1
C	4	4	7	8	1	1
D	2	4	8.5	8	0.5	0.25
E	2	5	8.5	6	2.5	6.25
F	20	25	2	1	1	1
G	13	18	3	3	0	0
H	9	4	5.5	8	2.5	6.25
I	9	10	5.5	5	0.5	0.25
						16.00

Rho = 0.867

The correlation (rho = 0.87) is highly significant. Teachers' top priority seemed to be identical with their top expectation. Teachers were unanimous in their expectations that they would be able to transform the following objectives into reality. (The objectives are placed in the order of the percentage rate of expectation).

F: The development of tolerance for different cultures (25%)
B: The development of ideas, concepts and generalizations (19%)
G: The ability to be objective and open-minded (18%)
A: The ability to recall basic facts about society (11%)
I: The ability to accept responsibility in a changing society (10%).

The above objectives were ranked high in the list of teacher priorities and expectations.

Divergent views become apparent in the following objectives:

E: The development of social skills (5%)
C: The ability to look for sources of information (4%)
D: The ability to interpret graphic data (4%)
H: The development of personal values (4%).

The high ranking given to objectives F, B, G and I would seem to indicate a high degree of awareness of the principles of the Project, and of subscribing to these principles. The emphasis given to these objectives in the Project materials is no doubt responsible for this rating. Whether these objectives were in fact satisfactorily implemented in the classroom situation, is another issue which will be tackled by observation.

It is interesting to note that an objective which was not given special emphasis in the Project, namely the ability to recall basic facts, was also listed in the upper half of the ranking. A plausible explanation for this high ranking could be that the feasibility of

achieving such an objective seemed quite possible to the teachers. Under the impact of the current examination system, these teachers were inclined to pour a reasonable amount of effort into factual knowledge to the detriment of other objectives. The fact that this objective was not ranked first on the list was indeed surprising; it may be an indication of some "strategy" on the part of the teachers who would like to idealize their teaching objectives by exaggerating the affective objectives and showing a slight de-emphasis on the less desirable objective of factual recall.

The development of skills (intellectual and social) and of personal values came quite low in the list of expectations. The feasibility of achieving the development of personal values seemed doubtful to the teacher and in the context of the Mauritian classroom situation, this was understandable.

What is not so clear, however, is the low rating ascribed to inquiry skills. It is not that teachers were not aware of the shift in emphasis from factual recall to inquiry skills in Social Studies education. An explanation that can be offered for the low percentage of teachers expecting the achievement of these objectives, is that the majority of teachers felt incompetent to handle the skills of the various disciplines upon which the programme draws, and not much was done to achieve those skills. It could be that the difficulties that cropped up in the classroom while teachers tried to achieve those skills, had caused teachers to deviate from their identification with the Project principles in this respect.

Teachers' Feelings about Outcomes of the Social Studies Programme

Question 13 considers teachers' attitudes towards what they considered to be the most important outcome of the teaching of Social Studies. It is assumed that teachers' attitudes concerning important outcomes in Social Studies must be considered if successful implementation of the materials is to be achieved. Four main possible outcomes were provided to the teachers who had to select the one which, according to them, was the most important. The response rate to these four outcomes was as follows:

1	The development of skills of inquiry in the Students.	56.5%
2	A knowledge of basic facts about the Mauritian Society.	28.3%
3	Preparation for future studies in separate subjects.	10.7%
4	An ability to handle value issues in the classroom.	4.5%

The high rating given to the development of skills of inquiry as the most important outcome, was quite surprising since teachers had not allotted a high ranking to skills objectives in their list of priorities and expectations. The following explanation is offered to account for this high ranking: the Project materials as well as the tests carried out so far in schools, have stressed the assessment of pupil achievement in various types of inquiry skills.

The emphases of these tests as well as individual teachers' experiences in working with these materials may be therefore responsible for this rating. Even though teachers had no special preference for the development of skills of inquiry as a teaching objective, and even though they had strong doubts about the feasibility of achieving such an objective, yet they had come to recognize that this should be the most important outcome of the teaching of Social Studies.

The reasonably high percentage of teachers rating a knowledge of basic facts as an important outcome, cannot be regarded as surprising. The results seemed to confirm the previous finding in this respect: the teaching of facts was over-emphasized in daily teacher-pupil interaction because of the impact of the current examination. Examination passes are of the utmost importance to the lives of the pupils and teachers think they are right to stress the recall of facts. More than a quarter of the population under study considered the ability to recall facts as the most important outcome of the teaching of Social Studies.

The predominance of examination consciousness among members of the teaching profession may have strongly influenced teachers in their rating of this outcome as well as in their rating of the third outcome, namely "Preparation for future studies in separate subjects". The external Cambridge examinations as they are offered right now, are based on separate subjects and not on integrated programmes like Social Studies. The separate subjects have come to be normally accepted as career-oriented subjects. To some teachers, therefore, the integrated Social Studies curriculum should be geared towards external examination requirements and should impart knowledge that adequately prepares pupils for such examinations.

It is obvious that with regard to teachers' attitudes towards the handling of value issues, the picture leaves much to be desired. Interestingly enough, these same teachers had given high priorities and expectations to values and attitudes objectives. It could seem that teachers' ideas of how to implement these objectives in the classroom were actually vague, and therefore, they were not in fact aiming at the attainment of such objectives. They paid lip-service to these objectives, while they laid more stress on the teaching of facts.

Another plausible explanation could well be that examinations were directing teachers' behaviour away from these objectives. Indeed, the fear of inadequate syllabus-coverage seemed to be another factor responsible for the comparatively low rating given to the handling of value issues as an important outcome.

Table A12 displays the results of chi-square tests applied to testing the reactions of the main sub-groups to the important outcomes of Social Studies. The key variable, here, seemed to be years of teaching experience: the more experienced teachers have learned during the adaptation period that the skills of inquiry should be the most important outcome. The less experienced teachers showed vacillating views on that outcome. This would seem to confirm the view that teachers need time for adaptation to teaching a new curriculum. As teachers gain more experience, they find it less difficult to teach inquiry skills.

Table A12: Reactions of Sub-groups to outcomes of the new curriculum

Sub-Groups	*Chi-square value*	*Inference*
Sex	$\chi^2 = 4.86$ $d.f = 3$	n.s.
Non Diploma holders/ Diploma holders	$\chi^2 = 5.24$ $d.f = 3$	n.s.
Diploma holders/Degree holders	$\chi^2 = 1.27$ $d.f = 1$	n.s.
Teaching experience < 5 years/ > 5 years	$\chi^2 = 8.98$ $d.f = 1$	**

Teachers' Feelings about the Social Studies Materials, Teaching and Status

These feelings were measured by the sentence completion test (Question 14). Seven open-ended statements were given to the teachers for completion and they related to

1 a comparison of Social Studies with the traditional subjects.
2 the Social Studies materials as developed by the Institute.
3 the involvement of teachers in the development of the Project.
4 the things teachers like best about the teaching of Social Studies.
5 the things teachers found most difficult in the teaching of Social Studies.
6 teachers' feelings about the discontinuity of Social Studies beyond Form III.
7 teachers' feelings about the possible fate of Social Studies.

An analysis of the pattern of replies made by respondents was first carried out so that the bulk of replies could be categorized into smaller units. Each sub-item was made up of a number of statements given by respondents and category boundaries were drawn where a "natural break" seemed to occur. Some of the sub-items had a dichotomous response pattern, that is, were made up of two values. Others were multi-valued, that is they were characterized by three or six values. In the process of categorization, single words or adjectives used by the respondents in presenting their views, were also categorized. The categorization thus preserved a large amount of the richness of the original responses and in a relatively rigorous format.

The next step was to try to "objectify the subjective" (Kerlinger)[3], to do some inter-rater reliability study on the categorized response types in each sub-item, since projective devices have a large element of subjectivity of interpretation. The categorized data

were presented to six independent judges who were asked for their views on the categorization. To the extent that their views correlated highly with the researcher's categorization, to this extent objectivity had been achieved.

The six judges whose views were tested, were approached separately within a fortnight. Thus the assumption could be made that they had not come together and so could not be expected to influence each other's opinions of the classification. In other words, the data obtained from each judge were independent of the data from other judges.

To test the validity of the categories used for classifying these open-ended responses, a binomial test was used. A formula for this test specially devised by Dr Mc Lean of the Liverpool School of Education is reported in Appendix I.

For a null hypothesis, it was supposed that statements were assigned to categories at random. On this null hypothesis,
r = number of statements on whose classification all judges agree
N = number of statements which are being classified.
r was compared with $\frac{1}{2}N$. If r is $\geq \frac{1}{2}N$, the null hypothesis could be safely rejected.

The values of the 7 sub-items are tabulated as follows:

Table A13: Values of the 7 sub-items of Question 14

Sub-Items	N	r
A	166	137
B	164	154
C	154	132
D	177	142
E	130	130
F	158	132
G	145	145

In the case of each sub-item, r was much greater than $\frac{1}{2}N$. So in each case the null hypothesis could be rejected. The categories used for classifying open-ended responses were thus valid.

The categories obtained for each sub-item were as follows:

A14: Categorization of Items

		Response Rate %
Sub-Item A:	*Comparing Social Studies with the traditional subjects*	
Category 1:	The interest and appeal of Social Studies as a study of society and a preparation for citizenship.	84
Category 2:	The pupil-centered approach and inter-disciplinary nature of Social Studies.	10
	No response	6

Thus, 94 per cent of the teachers found Social Studies a far more interesting subject than the traditional subjects. In an examination-conscious society, this is perhaps remarkable in itself.

Sub-Item B:	*The Social Studies materials as developed by the Institute*	
Category 1:	They are appropriate, relevant and attractive.	77
Category 2:	They are inadequate and incomplete.	15
	No response	8
Sub-Item C:	*Teacher involvement in the Project development*	
Category 1:	Teachers to be co-deciders.	76
Category 2:	Teachers to be acceptors.	11
	No response	13

		Response Rate %
Sub-Item D:	*The things teachers like best about the teaching of Social Studies*	
Category 1:	Good class participation.	23
Category 2:	The treatment of social issues.	46
Category 3:	The variety of teaching techniques.	20
Category 4:	The development of critical thinking.	11
Sub-Item E:	*The things teachers found most difficult in the teaching of Social Studies*	
Category 1:	The handling of value issues.	10
Category 2:	The language problem of students.	9
Category 3:	Discussion work/group work.	11
Category 4:	The handling of geographical data.	18
Category 5:	The handling of topics (historical, economic, sociological) which do not come under teachers' specialisation.	20
Category 6:	The lack of visuals and other resources at school.	7
	No response	25
Sub-Item F:	*The discontinuity of Social Studies beyond Form III*	
Category 1:	A disastrous move, a regrettable mistake, Social Studies to be an option at higher levels.	74
Category 2:	It helps students to choose separate subjects in line with their aptitudes.	7
Category 3:	It is inevitable because of the pressure of External Examinations.	2
	No response	17

		Response Rate %
Sub-Item G:	*The possible fate of Social Studies*	
Category 1:	Its survival subject to constant changes/ modifications.	6
Category 2:	A bright future.	56
Category 3:	A bleak future if not extended beyond Form III	20
	No response	8

Summary and Conclusions

In this chapter, Questions 1 to 4 have been considered. The results are summed up below and some general points are offered as conclusions. The relevant points have already been mentioned in some detail, and they only need summarizing here.

The national survey by mailed questionnaire revealed that teacher background data (for example, sex, school types, years of teaching experience, qualifications, length of service at present school ...) could not be considered as significantly influencing curriculum implementation. Strategies of change differed in relation to differences in teachers' qualifications only. The most powerful teacher attribute in this analysis was, in fact, teacher training. The other teacher variables did not have any significant impact on the implementation process.

Insofar as the ranking of the relative importance of the Project's objectives was concerned, the finding was that there was unanimity of opinion among the teachers and that teachers' attitudes to the Project's objectives were on the whole positive. However unqualified or untrained teachers did not seem to be conscious of the de-emphasis on

the recall of facts in Social Studies education. Similarly, neither unqualified nor qualified teachers seemed to be aware of the great stress laid by the Project on skills objectives. Such objectives were given low priorities in ranking, while relatively high priorities were given to the objectives in the affective domain. The contradiction that appeared in the equally high and low ranking of attitudes/values objectives would seem to indicate that teachers were paying only lip-service to such objectives, and/or did not know what to do about them.

With regard to teachers' attitudes towards the Project's philosophy and rationale, an overall analysis showed positive attitudes. However, in the examination of the sub-items of the attitude scale, it became apparent that teachers were not clear about the principles underlying the new programme. The teachers trained by the Institute in the use of the Project's materials showed more highly favourable reactions towards the Project's strategy, while the responses of both the unqualified teachers and Degree holders (without a professional qualification) revealed reservations about many of the Project's ideas. By failing to establish appropriate relationship between the positive and negative sub-items of the attitude scale, teachers showed their misunderstanding of the Project's strategy; and therefore such teachers were likely to face problems in effectively translating the Project's ideas in the reality of the classroom.

Teachers showed unanimity in their reactions to the facilitating and inhibiting factors of implementation. The most inhibiting implementation factors were those relating to management strategies namely the decision to discontinue the Project beyond Form III, inadequate classroom visits by the Institute staff, and the provision of the

Form III national examinations in Social Studies. Thus the most significant issue of implementation according to the teachers, were those which were concerned with central policies, with macro-political factors.

It was surprising to find that the teachers conceived the Form III national examination based on the innovative programme, as being the antithesis of the innovation. This may indicate that teachers felt constrained by the examination in the sense that they might not implement the philosophy of the project but simply prepare students for the national examination. On the other hand, it is a fact that an innovative external examination such as the Form III examination can be an important asset to the implementation of the curricular innovation; the teachers who were preparing pupils for such an examination should have felt the need to implement the philosophy more keenly.

The inadequate on-the-job support and the discontinuity of the Project beyond Form III were no doubt significant inhibitors of implementation. The problem raised by the discontinuity of the Project beyond Form III will be considered later in this chapter.

There was no substantial disparity between teachers' priorities and expectations in the ranking of objectives. These findings could be interpreted as reflecting a lack of realism on teachers' part. Knowing the constraints of the school background against which they were working and the pressure of external examinations they had to face right from lower secondary level, many teachers had reasoned that it would be possible for them to transform certain objectives, especially those in the affective domain into reality. This would

indicate that teachers tended to create a rather progressive image of their teaching which, in fact, was not consonant with the reality of the classroom situation. The same teachers did confirm in the open-ended questionnaire that value-laden issues were difficult to handle. This finding could also be an indication of what teachers assumed to be the "dominant ideology".

Teachers' attitudes concerning important outcomes as a result of the teaching of Social Studies were found to be rather dissonant with their ranking of objectives and their expectations of the achievements of these objectives. The development of skills of inquiry was considered to be the most important outcome, while in the ranking of their priorities and expectations, teachers had not given much importance to the skills objectives. Teachers' contradictory opinions were also obvious in the low rating given to the handling of value issues as an outcome of the teaching of Social Studies. On the other hand, teachers showed consistency in their comparatively high rating of the knowledge objectives, the recall of facts in particular. It would seem therefore, that while accepting the Project's objectives, teachers saw no way in which they could resist the demands of the examination system, the time-table and so on which forced upon them a particular approach to knowledge. There was also the fact that more than half of the Form III Social Studies teachers population (about 65 per cent) were unqualified teachers who did not have any in-depth training in the subject matter and pedagogy appropriate for Social Studies and felt incompetent to handle such objectives.

Teachers' feelings about the new Social Studies programme compared to the traditional subjects, and about the Project's materials were on the whole very favourable. Regarding teacher involvement in

development of the Project, the major implication was that the developer could not account for the full range of teaching that existed in the classroom, and therefore the teachers' experience could help significantly in curriculum planning. Some teachers, however, opined that teachers had neither the required time nor the appropriate expertise to help in curriculum development. They also felt that leaving individual teachers to settle what should be done, could not really help the island's centralised educational system.

Teachers liked a variety of things about the programme ranging from good class participation, the treatment of social issues, the variety of teaching techniques to the development of critical thinking. The things they found most difficult referred to the handling of values, the language problems of students, discussion and group work, the treatment of topics which did not come under their specialization and the lack of visuals and other resources at school. With regard to the treatment of aspects of the various disciplines upon which the integrated programme draws, the teachers' background data reveals that the average Social Studies teacher was likely to be unfamiliar with areas like Economics, Sociology, Geography or History. These were precisely the areas in which they felt insecure.

Teachers' feeling towards the discontinuation of Social Studies beyond Form III were, on the whole, very bitter. They considered this to be "a disastrous move", "a regrettable mistake" and felt that Social Studies should have found its place in the system of options operating at Form V level. The majority felt that the Social Studies Project had a bright future, but many were also aware of its bleak future if the subject will not continue in higher forms.

It is obvious, therefore, that the structured system of the school in terms of movement from lower forms to higher forms imposed constraints on the innovation. The performance of the teacher was rated by how well prepared his or her students were for the Cambridge Form V examination.

Thus the Cambridge external examination with their traditional format of examination papers, could be said to constitute a huge stumbling block in the path of effective curriculum implementation at lower secondary level. Teachers would like to try implementing the type of abilities, skills and attitudes the innovative programme was trying to impart, but they felt they were distracted from such objectives by external examinations procedures, expectations and pressures at higher secondary level.

Ideally, teachers would have liked the Project to continue up to Form V, partly to circumvent the problem raised above and partly because the Project has made a significant impact upon their thinking and that of their pupils.

Summing up, then, evidence has been presented in this Chapter which bears directly on the four main questions outlined at the beginning of the Chapter. The hypotheses may be briefly examined now:

1. It was predicted that the Project would be implemented more effectively when appropriate structural changes have taken place. Evidence thrown up in this chapter reveals that teachers feel constrained by the existing system of examination in their implementation of the Project. While the Teacher Questionnaire data do measure this hypothesis, they could be more complete by reference to the results of other measures. Therefore

judgements on this point may have to wait the results of other data analysis. A tentative conclusion would be that the existing structural changes are not conducive to effective implementation.

2. Qualified and trained teachers would be expected to be superior to unqualified teachers in their knowledge of the Project's objectives. The teachers' data have been examined in detail on this point, and it is found to be quite true. The Institute-trained Diploma holders do show a better knowledge of the Project objectives. The Degree holders who are not Institute-trained but who would be expected to perform equally well, do not in fact do so. This hypothesis, then, is fully confirmed.

3. It was predicted that teachers would not have the same perceptions in their ranking of their objectives' priorities and expectations. This is not confirmed. No disparity was found between priorities and expectations, revealing a lack of realism on teachers' part and a tendency to create a progressive image of their teaching.

4. The fourth hypothesis predicting the superiority of the trained teachers over the other groups in their knowledge of the Project's philosophy and strategies, is wholly confirmed. The group of Diploma-holders manifested its clear superiority over the others.

5. The fifth hypothesis predicting the more favourable attitudes of the trained teachers towards the Project, confirms the consistent superiority of the Diploma-holders group over the other groups. However, other factors like the constraints of the examination system had also a great impact on teachers' attitudes.

The present findings, then, support the hypothesis about the impact of teacher-training in the implementation of the Project. Some of these findings will be used in the next Chapters to ascertain to what extent teachers behaved in accordance with the ranking of their objectives' priorities, and to what extent their expectations become true.

1. Oppenheim, A. N., Questionnaire Design and Attitude Measurement, Heinemann, Reprint 1970. 140.

2. Shaw, M. E. and Wright, J. M., Scales for the Measurement in Attitudes, Mc Graw Hill, New York, 1967. 565.

3. Kerlinger, F. N., Foundations of Behavioural Research. Holt, Rinehart and Winston, 2nd edition, 1973.

CHAPTER IV

RESULTS II: IMPLEMENTATION IN THE CLASSROOM

We now turn to the section of the results dealing with the actual use of the new curriculum in the classroom. This section covers Questions 5 and 8 in Chapter I, which run respectively as follows:

1. To what extent are the intended role changes implemented in the classroom?

2. What happens in the classroom context when the new curriculum is being implemented?

These two questions may be put in the form of a few main hypotheses to which, on theoretical and empirical grounds, the answer is predicted. Theoretically, the answers to questions 5 and 8 would seem to be fairly plain. The implementation of the Project's intentions should be fairly high among teachers who have been trained in the use of the Project's materials, or who possess adequate skills and knowledge to understand the Project's philosophy and rationale. It could be predicted that unqualified and untrained teachers should find it difficult to cope with the Project's expectations for behavioural change on the part of both teacher and pupils in the classroom.

The effective implementation of the new curriculum depends not only on the teacher personal factors, but upon a wide variety of factors, some of which may be decisive rather than incidental features of the implementation process. Such factors could well lead to adaptations or adjustments being made by the teachers. Thus, it is expected that teachers would select features of the innovation which are congruent

with existing practices, while they would tend to ignore the new features which make extra demands upon them. They would tend to revise the Project's objectives, and its expectations for teachers' and pupils' role changes in the classroom to suit their own needs. It could be further predicted that the unqualified teachers would adapt the Project in a less successful way than the qualified group. Adaptations of the Project could also occur as a result of unanticipated changes in the policy of the administrators. Evidence of such adjustments can only be obtained by documentary analysis. This will be reported in a later section.

Information relating to the above points which could be obtained by direct classroom observation, has been collected so that the following broad hypotheses may be put forward:

1. Trained and qualified teachers are predicted to be more effective implementers of the new curriculum than untrained teachers; it is hypothesized that they perform higher on both F.I.A.C. categories of verbal behaviour and the Evans/Behrman observation schedule related to the implementation of the Project's main features.

2. A great deal of adaptations of the Project's materials would take place in the classroom, and teachers would tend to pay more attention to the features of the curriculum which are consistent with existing features than to those which are new.

3. The unqualified teachers would favour adaptations of the Project to their own needs without significantly modifying their own behaviour in accordance with the Project's intentions, much more than the qualified teachers.

Before presenting evidence bearing directly on these hypotheses consideration will be paid briefly to the method of analysis, the school background characteristics and the reliability of the observation instruments used.

Using the data collected by the Flanders Interaction Analysis System and the Evans/Behrman Schedule, it was possible to consider classroom events in terms of the types of oral behaviour prevailing in the classroom. Other types of data related to classroom organization were also collected during the course of observers' visits to each classroom. Using the information thus gathered, an attempt will be made to search for patterns from among the classroom events in order to help explain why some teachers implement the new curriculum in one way, while others implement it in other ways.

Method of Analysis

Regarding the analysis of structured classroom observation data, guidelines in the existing literature are few and rather vague. No good rationale exists as to why one mode of analysis should be preferred to another. Moreover, in view of the complexity of most observation systems, it is not easy to conduct all possible analyses. Only those which could provide the most appropriate description of the phenomena under study have been selected in this investigation.

Thus, averaging the values on each of the variables such as the categories of F.I.A.C. provides a useful description of typical classroom practice in implementing the new curriculum. It was also considered important to see how sub-groups of teachers depart from this average practice. For this purpose, chi-square tests were run on the

data of both observation systems to test for statistical differences among observations of teacher sub-groups. As a basis for the identification of a category of "implementers" among the teachers, Pearson product-moment correlations were run between the behavioural indices; these were then submitted for a factor analysis and varimax rotation by computer.

The Flanders interaction system data and those of the Evans/Behrman schedule will be analysed separately first, and then the results of both sets of observational data will be brought together in the search for relationships between sub-groups of teachers and the implementation of the Project and in the establishment of a set of implementers.

School Characteristics

The eighty classes which were visited were drawn from sixty-nine schools, and some of the characteristics of those schools and classes are given in table B1 below. Histograms of these variables are illustrated in tables 4(a) to 4(f) in Appendix II.

Table B1: School Characteristics

	N	*%*
School Type:		
State	10	12.5
Private	61	76.2
Junior Secondary	9	11.2
School Environment:		
Urban	44	55.0
Rural	36	45.0

	N	%
Class Sex Composition:		
Boys	15	18.7
Girls	25	31.3
Mixed	40	50.0
Teachers Sex:		
Male	37	46.3
Female	43	53.7
Teachers Qualifications		
Unqualified	36	45.0
Diploma Holders	28	35.0
Degree Holders	16	20.0

The State Schools and, in particular, the newly-built Junior Secondary Schools are housed in spacious and magnificent buildings. They are appropriately equipped both as regards classrooms, staff-rooms, offices, laboratories, workshops, libraries, hygienic quarters and as regards school grounds.

Originally, the Junior Secondary Schools were to have a special technical characteristic which was meant to give a technical trend to secondary education, since it was reckoned that the latter is too academic and literary. Because they were originally designed to meet the needs of the less academic pupils, they were to have a strong technical orientation beyond Form III. However, these schools have already been reorganized to form part of the normal secondary school system for children up to Form V. This is due to the commonly-held belief that "academic" education is still the best form of education, as it is seen as a major determinant of life chances.

In contrast to the State Schools and the Junior Secondary Schools, a significant number of the Private schools are run in rented buildings

which were generally designed for residential purposes. There is a general lack of maintenance of the buildings, and the school furniture is of poor quality. The thin partitions between rooms do not lead to effective class management on either side. However, some of the Private schools especially the denominational schools, are manifestly of better quality.

The structure of most classes in all three types of schools is such that it helps the teacher to dominate. A physical re-arrangement of pupils in groups occurs on rare occasions; the entire class is usually kept on a row to row desk arrangement. Under such circumstances, the traditional pattern of interaction whereby teacher talk predominates is very strong for both the teacher and the pupils.

A: THE FLANDERS INTERACTION ANALYSIS SYSTEM

Inter-rater Reliability

Although the reliability of the F.I.A.C. had been sufficiently demonstrated in earlier studies, the degree of agreement among observers and observations in this study was calculated by comparing the coding of pairs of observers in the same classroom at particular points in time. The reliability figures were based on 160 joint observations of 80 teachers by sixteen observers and the researcher during three sets of observation; each teacher was observed for 40 minutes in each of the three observation sessions. Reliabilities were calculated for each variable; thus, in the case of the Flanders system, each single variable is equivalent to each individual category (for example, Teacher Questions) or each combined set of categories (for example, Teacher talk). On the Evans/Behrman schedule, each statement forms a single variable. As an index of inter-rater

reliability, Pearson product-moment correlations are reported for F.I.A.C.

In general, agreement between all three sets of observation and the two raters was found to be satisfactorily high as is revealed by Table B2. It is of interest to point out here that the first and second set of observation was carried out by one rater, and the third observation by a second rater.

Table B2: Pearson Correlation Matrices Showing Patterns of Correlations among Observations

(with probability level)

F.I.A.C. Variables	*1st/3rd Observation*	*1st/2nd Observation*	*2nd/3rd Observation*
Teacher Talk	57 ***	60 ***	67 ***
Teacher Response	68 ***	79 ***	56 ***
Teacher Question	73 ***	77 ***	66 ***
Teacher Lecture	72 ***	80 ***	67 ***
Pupil Talk	67 ***	81 ***	55 ***
Pupil Initiation	23 *	21 *	90 ***
Silence	67 ***	40 ***	49 ***

(Decimal points omitted for the sake of convenience)

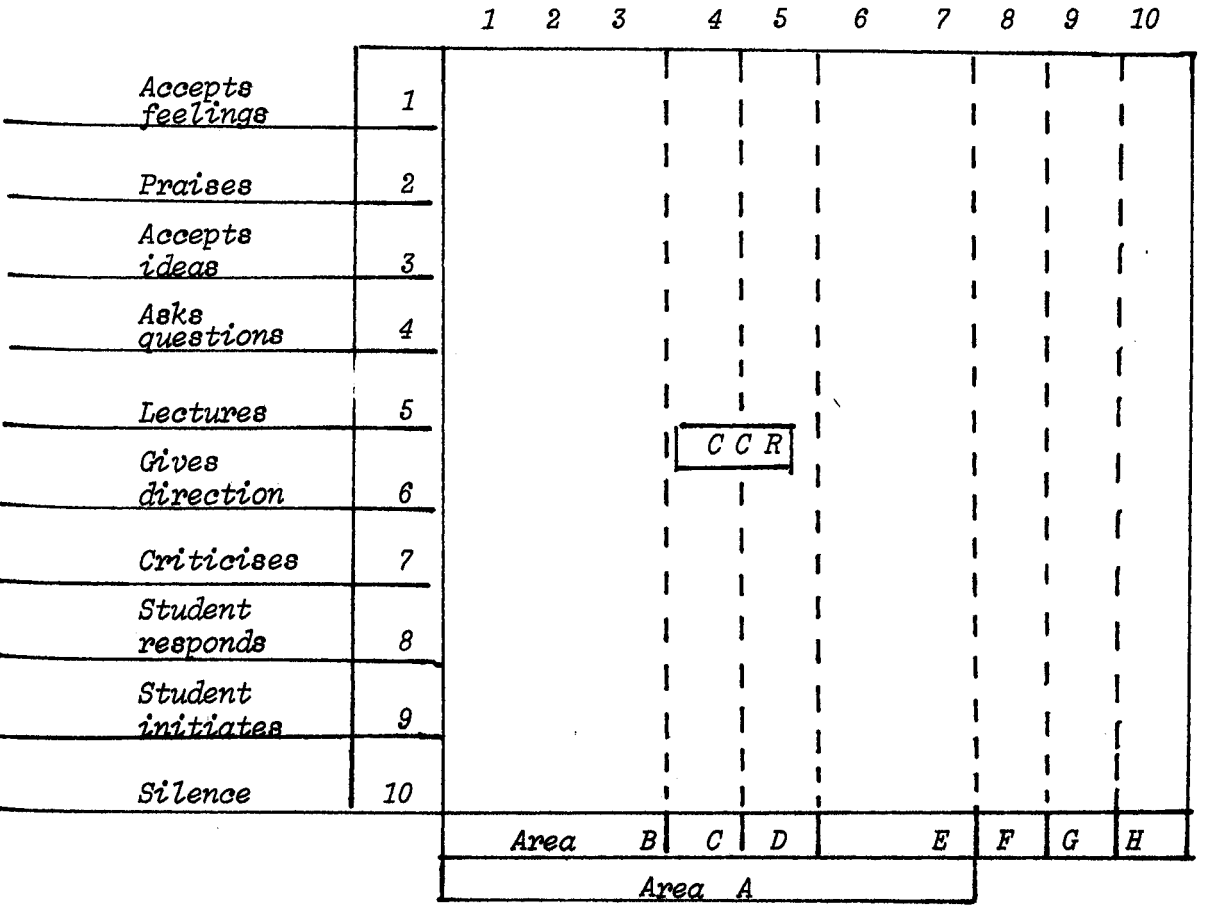
The reliability levels for the F.I.A.C. variables are quite high. The high correlations are statistically significant at the .01 per cent level and beyond in most cases, with the exception of the Pupil Initiation variable which had a more moderate significance for two sets of observation. The general conclusion is that there is a high degree of agreement among all sets of observation, and the agreement is not simply a chance occurrence.

The Quality of Teacher-Pupil Interaction

A common procedure with F.I.A.C. data is to tally the absolute amount or frequency of each category across all observation sessions. The same procedure is used here, although it is also recognised that a totally different picture would arise if the duration of teacher behaviour in each category is analysed. Each category is considered in turn, and the data for all the teachers are added together. These category totals are expressed as a percentage of the total score of all recorded observations. This helps to give an aspect of the quality of teacher-pupil interaction.

In an attempt to provide the most appropriate description of teacher-pupil interaction, the raw data from the Flanders interaction coding was modified in some ways to allow for sensitive analysis of possible disparities among sub-groups of teachers and pupils. For instance, the treatment of categories 6 and 7 separately (namely Teacher gives direction and Teacher criticises) was dropped from the analysis. They were combined together under Teacher Control. Similarly, categories 1, 2, 3 were combined together under Teacher acceptance and clarification of pupils' ideas and feelings or Teacher Response. Figure IX shows areas of F.I.A.C. matrix selected for analysis; it is provided on the next page.

Figure IX: Areas of F.I.A.C. Matrix Selected For Analysis



Area A: Teacher talk - a high percentage of this area tends to establish restraints to pupil's behaviour in a Social Studies room.

Area B: Teacher response - the Social Studies teacher's changing role is positively related to this area.

Area C: This tends to expand pupil's freedom of participation.

Area D: Restricts pupil's participation and the inquiry approach.

Area E: Teacher control.

Area F: Pupil's participation in response to questions.

Area G: Pupil's initiated talk in class discussion or group discussion.

Area H: Wait-time silence and confusion.

C.C.R.: Content cross Ratio is devised from categories 4 and 5.

Table B3: Teacher Pupil Interaction in the Classroom

	Categories	*Percentages of Total Observations*
(a)	Teacher talk (1 to 7)	72.93
(b)	Teacher acceptance/clarification of Pupils' Ideas and feelings (1 to 3)	6.74
(c)	Teacher questions (4)	21.5
(d)	Teacher lectures (5)	42.0
(e)	Teacher control (6 to 7)	2.69
(f)	Pupil solicited talk (8)	19.31
(g)	Pupil initiation (9)	0.51
(h)	Silence/confusion (10)	7.3

Several interesting points emerge from the table above which reflects data obtained from the whole sample. On the average, 73 per cent of the classroom interaction was devoted to teacher talk which thus constituted the highest proportion of all interaction. Lecturing (42 per cent) was the most frequent kind of teacher talk, followed by questioning (21.5 per cent). Praise or encouragement of the pupil, accepting or using pupils' ideas, accepting the feeling of pupils accounted for 6.74 per cent of verbal behaviour in the classroom. Giving instructions or criticisms were even more infrequent, both accounting for 2.69 per cent of all the talk in the classroom. 19.81 of the classroom interaction was devoted to pupil talk; about 19.31 per cent of the talk is response to teacher questions and about .51 per cent of the talk was initiated by the pupil.

Silence, including wait-time and confusion accounted for 7.3 per cent of the classroom interaction.

On the whole, the analysis of the data points to what Galton, Simon and Croll (1980)[1] would refer to as *"the asymmetry of teacher-pupil interaction"*, namely the tendency for the teacher to spend most of the lesson time interacting with pupils, while the individual pupil interacts with the teacher for only a small proportion of the time. The teacher use of indirect verbal behaviour constituted 28 per cent of teacher talk as compared with the use of direct verbal behaviour which accounted for 45 per cent of teacher talk.

The Content Cross Ratio (CCR) which was 64 per cent revealed a heavy concentration on academic material. It is interesting to compare this figure with a national average of 50 per cent to 55 per cent found by Wagg in Britain (1973) and by Flanders in U.S.A. (1971)[2]. The high CCR also reflected the strength of the teacher's control over knowledge and the central place such control has in the definition of the teacher's role.

In such an atmosphere of teacher predominance in class, it is revealing that only 2.6 per cent of teaching acts fell into what is known as the *"controlling category"*. Little disruptive behaviour was observed, and this was supported equally by the observers' narrative accounts. The teacher behaviour was in accordance with the role expectancies held for them by their pupils, and therefore, there was not much need of explicit disciplining or controlling moves.

The evidence, then, from both observational data as well as from observers' descriptions of classes points to the prevailing atmosphere as being one capable of ensuring a high degree of attention

to the teacher's talk. Pupil initiation or unsolicited talk would amount to *"disruptive"* behaviour in the average classroom.

There was, of course, considerable variation in the verbal behaviour of individual teachers. Many of the teachers differed to some extent from the average behaviour illustrated in Table B4. Thus, the range is as follows:

Table B4: Variation in verbal behaviour

		%
(a)	Teacher talk	98 - 44
(b)	Teacher acceptance and clarification of ideas and feelings	19 - 0
(c)	Teacher question	37 - 1.2
(d)	Teacher lecture	97 - 8
(e)	Pupil solicited talk	42.5 - .9
(f)	Pupil unsolicited talk	10 - 0
(g)	Silence/Confusion	24 - 5

It seems clear, therefore, that many teachers differed in some respects from the typical behaviour provided by the expression of the category totals as a percentage of the total sum of all recorded observations.

Differences in Interaction among Sub-groups of Teachers

In spite of the overall differences in interaction among teachers, sub-groups of teachers may display similar behaviour characteristics. The question which was asked, then, was whether there were certain characteristics which could affect teacher behaviour across the F.I.A.C. categories. This question was examined in relation to the following sets of variables:

1. teacher sex
2. school environment

3. class sex composition.

4. teacher qualifications.

5. years of teaching experience.

χ^2 tests were run to test for statistical differences among these relevant sub-groups. The results of these tests are illustrated in Table B5 on the next page. An example of these cross-tabulations can be found in Table 5A in Appendix II.

Of all the five selected variables, the one which was in fact strongly related to verbal behaviour across the F.I.A.C. categories was teacher qualifications; the relationship was not simply a chance occurrence. This confirmed the results reported in Chapter III. The Institute-trained Diploma holders and the Degree holders were more inclined to accept and clarify pupils' ideas and feelings (Teacher Response) than the unqualified group of teachers. Similarly, they were more inclined to encourage Pupil Initiation. The unqualified group was particularly more prone to lecturing than the professionally qualified groups of teachers.

The results also show that class sex composition was strongly related to pupil initiation; girls' classes were more inclined to initiate ideas than boys or mixed classes. The other variables, namely teacher sex, the school environment and years of teaching experience were not at all related to verbal behaviour.

B5: Differences in Verbal Behaviour among Teacher Sub-groups

Sub-groups	*Teacher Talk*	*Teacher Response*	*Teacher Question*	*Teacher Lecture*	*Pupil Talk*	*Pupil Initiation*	*Silence*
1. Class Sex Composition	$\chi^2 = 58.48$ $d.f = 54$ n.s.	$\chi^2 = 22.44$ $d.f = 32$ n.s.	$\chi^2 = 54.97$ $d.f = 58$ n.s.	$\chi^2 = 94.19$ $d.f = 86$ n.s.	$\chi^2 = 39.38$ $d.f = 52$ n.s.	$\chi^2 = 22.58$ $d.f = 10$ **	$\chi^2 = 45.07$ $d.f = 34$ n.s.
2. Teacher Sex	$\chi^2 = 36.64$ $d.f = 27$ n.s.	$\chi^2 = 18.23$ $d.f = 16$ n.s.	$\chi^2 = 26.36$ $d.f = 29$ n.s.	$\chi^2 = 47.48$ $d.f = 43$ n.s.	$\chi^2 = 14.95$ $d.f = 26$ n.s.	$\chi^2 = 10.53$ $d.f = 5$ n.s.	$\chi^2 = 18.84$ $d.f = 17$ n.s.
3. Rural/Urban Schools	$\chi^2 = 25.04$ $d.f = 27$ n.s.	$\chi^2 = 15.52$ $d.f = 16$ n.s.	$\chi^2 = 29.60$ $d.f = 29$ n.s.	$\chi^2 = 43.30$ $d.f = 43$ n.s.	$\chi^2 = 17.74$ $d.f = 26$ n.s.	$\chi^2 = 6.66$ $d.f = 5$ n.s.	$\chi^2 = 10.61$ $d.f = 17$ n.s.
4. Teacher Qualification	$\chi^2 = 42.2$ $d.f = 54$ n.s.	$\chi^2 = 46.93$ $d.f = 32$ *	$\chi^2 = 63.05$ $d.f = 58$ n.s.	$\chi^2 = 114.11$ $d.f = 86$ **	$\chi^2 = 5858$ $d.f = 52$ n.s.	$\chi^2 = 28.33$ $d.f = 10$ ***	$\chi^2 = 44.60$ $d.f = 34$ n.s.
5. Years of Teaching Experience	$\chi^2 = 26.58$ $d.f = 27$ n.s.	$\chi^2 = 17.18$ $d.f = 16$ n.s.	$\chi^2 = 34.27$ $d.f = 29$ n.s.	$\chi^2 = 47.71$ $d.f = 43$ n.s.	$\chi^2 = 25.29$ $d.f = 26$ n.s.	$\chi^2 = 1.35$ $d.f = 5$ n.s.	$\chi^2 = 19.89$ $d.f = 17$ n.s.

Categories of Implementers

Both Galton et al (1980) and Eggleston et al (1975) made use of observational schedules with their precisely-defined categories of teacher-pupil interaction to develop their notion of teaching style or *"a consistent set of teaching tactics"*[3]. This set of teaching tactics evolves mainly as a result of careful observation of teacher-pupil behaviour in the classroom. The same procedure of classroom observation will be used in this research in an attempt to categorise teachers in terms of implementers (high, medium and low). The theoretical basis for classifying teachers as high, medium and low implementers is briefly as follows: The new curriculum stipulates the teacher's changing role relationships. The teacher's changing role is positively related to Flanders' categories of Teacher Response, Teacher Question, solicited Pupil Talk and Pupil Initiation. It can thus be hypothesized that teachers who display these categories in the classroom will be high implementers. Those who encourage only Teacher Question and Pupil Talk are moderate implementers, while those who mainly stress Teachers Talk, particularly Teacher Lecture, are low implementers.

In an attempt to establish a statistically-based rationale for classifying teachers into categories of implementers, an analysis of the average scores of each teacher over all observations was carried out. The pattern of intercorrelations among all three sets of observations was first examined for its degree of agreement or consistency. Since agreement between all three observations was found to be satisfactorily high, the average scores could well be used to subdivide the teachers into categories of implementers.

The statistical technique used was Pearson's correlation coefficient. The results are tabulated in Table B6.

B6: Intercorrelation of F.I.A.C. Categories

(Pearson co-oefficients with probability level)

–	*Teacher Talk*	*Teacher Response*	*Teacher Question*	*Teacher Lecture*	*Pupil Talk*	*Pupil Initiation*	*Silence*
Teacher Talk	I	- 21 *	- 55 ***	82 ***	- 74 ***	- 44 ***	- 29 **
Teacher Response		I	24 **	- 51 ***	22 *	27 **	- 16 n.s.
Teacher Question			I	- 85 ***	75 ***	05 n.s.	- 31 **
Teacher Lecture				I	- 82 ***	- 29 **	07 n.s.
Pupil Talk					I	07 n.s.	- 38 ***
Pupil Initiative						I	30 **
Silence							I

(Decimal points omitted for convenience sake)

Teacher Talk and Teacher Lecture both show a negative correlation with the other interaction variables. Teacher Question and Pupil Talk show a high correlation, whereas Teacher Response and Pupil Initiation are highly correlated. A tentative empirical basis for classifying teachers into categories of implementers might be thus established:

1. Low implementers : Teachers who had a relatively high total of talk and lecture.

2. Medium implementers : Teachers who scored relatively high on question and pupil talk.

3. High implementers : Teachers who scored relatively high on question, pupil talk, as well as on teacher response and pupil initiation.

The following case numbers would identify the three types of implementers:

B7: Categories of Implementers based on Intercorrelation of F.I.A.C. categories

Low implementers Case Nos. (N = 25)		*Medium implementers Case Nos. (N = 30)*			*High implementers Case Nos. (N = 25)*	
1	34	5	35	56	2	47
3	41	7	36	58	12	57
4	42	9	37	63	17	62
6	48	10	38	65	18	64
8	49	14	43	67	19	66
11	51	15	45	69	23	70
13	53	16	46	71	26	72
20	54	29	50	74	27	73
21	59	30	52	76	28	75
22	60	32	55	79	31	77
24	61				39	78
25	68				40	80
33					44	

In an attempt to establish a more rational grouping of such data, factor analysis was run on both F.I.A.C. and Evans/Behrman schedule variables. This procedure will be considered later in this section.

B: THE MODIFIED EVANS BEHRMAN OBSERVATIONAL SCHEDULE

This schedule measured what actually happened in the classroom using the new curriculum programme. As explained in Chapter II, it was based on a list which reflected all the main characteristics of the programme. Using such a checklist each observer made judgements about the implementation of each feature of the programme, and gave a score of 1 if the characteristic was observed, at least sometimes, during a whole lesson and 0 if not observed. Table B8 represents the selected implementation data which were collected with such an observation schedule.

B8: Checklist Items

1 Teacher ensures that lesson objectives are made clear to the class.

2 Contribution of teacher and pupil talk is approximately equally balanced.

3 Teacher supplements the textbook content.

4 Teacher uses a reasonable number of visual devices, including textbook pictures.

5 Pupils are encouraged to find information from a variety of sources.

6 Teacher develops ideas, concepts and generalizations.

7 Teacher strikes a balance between factual and thought-provoking questions.

8 Discussion between teacher and class, teacher and group, teacher and individual is encouraged.

9 In the treatment of value issue, pupils are allowed to clarify their attitudes and values.

10 Pupils are encouraged to be objective in discussion and in evaluating information.

11 Recording work is discussed with class, but pupils are free to write or draw.

12 Teacher ensures that class knows and understands textbook content.

Inter-Observation Reliability

In view of the binary nature of the data, chi-square tests were used to assess inter-observation reliability. The results are as follows:

B9: Inter-Observation Reliability on the Evans/Behrman Schedule

Sub-Items	*1st/2nd Observation*	*1st/3rd Observation*	*2nd/3rd Observation*
1	χ^2 = 1.06 n.s.	χ^2 = 10.13 ***	χ^2 = 1.84 n.s.
2	χ^2 = 23.11 ***	χ^2 = 9.61 ***	χ^2 = 2.82 n.s.
3	χ^2 = 5.14 *	χ^2 = 14.29 ***	χ^2 = 7.96 **
4	χ^2 = 7.55 **	χ^2 = 15.99 ***	χ^2 = 2.43 n.s.
5	χ^2 = 3.21 n.s.	χ^2 = 23.77 ***	χ^2 = 3.77 *
6	χ^2 = .78 n.s.	χ^2 = 24.10 ***	χ^2 = .04 n.s.
7	χ^2 = 8.59 **	χ^2 = 15.92 ***	χ^2 = 1.63 n.s.
8	χ^2 = 23.04 ***	χ^2 = 15.16 ***	χ^2 = 10.13 ***
9	χ^2 = 2.15 n.s.	χ^2 = 32.70 ***	χ^2 = 5.46 **

Sub-Items	*1st/2nd Observation*	*1st/3rd Observation*	*2nd/3rd Observation*
10	$\chi^2 = .01$ n.s.	$\chi^2 = 1.11$ n.s.	$\chi^2 = .000$ n.s.
11	$\chi^2 = .026$ n.s.	$\chi^2 = 9.09$ **	$\chi^2 = .06$ n.s.
12	No computation given that there was only 1 row.		

(Note: The first and second set of observation was carried out by one observer, and the third observation by a second observer).

The results show clearly that the first and third set of observation illustrates a high degree of agreement across all items (apart from item 10) as expressed by highly significant chi-square values. Inter-rater consistency is not so obvious in the case of certain items in the other sets of observation. This can be explained by the fact that this observational schedule was in fact measuring far more complex behaviour than the F.I.A.C. system, for example, ensuring that lesson objectives are made clear to the class (Item 1), aiming at objectivity in class discussion (Item 10) or clarifying pupils' attitudes (Item 9). Such types of behaviour occurred too infrequently during the check lessons to allow for greater consistency among all three sets of observation. For instance, not all the lessons observed were introductory lessons which would enable the observers to rate the teacher's efficiency in explaining the lesson objectives.

Thus, in spite of the fact that one set of observation was out of line with the other two, the reliability of this measure can be fairly well-established.

Differences among Teacher Sub-Groups

Chi-square tests were run to test for statistical differences among relevant teacher sub-groups across all twelve items of this schedule. The results are shown in Table B10 on pages 174 and 175. An example of these cross-tabulations is given in Table 5(b) in Appendix II.

The attribute which made a significant impact on the implementation of the Project's main features, is no doubt teacher qualifications. The results reveal a strong relationship between this attribute and eleven of the twelve items of the observational schedule. They thus confirm the previous findings on F.I.A.C.. Qualified teachers, including the Diploma-holders and the Degree-holders, were more inclined to implement the Project's strategies than the unqualified group. They were particularly keen on making lesson objectives clear, inviting class contribution, using visuals, developing ideas and concepts, maintaining a balance between factual and thought-provoking questions, and carrying out discussion work. They were less keen when it came to supplementing the prescribed textbook, encouraging pupils to locate information, handling and clarifying pupils' attitudes, aiming at objectivity in discussion and allowing pupils freedom in recording work. Irrespective of their qualifications, teachers on the whole helped their pupils to understand and know their textbook content.

The number of years of teaching experience seems also to be influencing, to a minor extent, the implementation process. Teachers with more than five years of experience were more conversant with some of the Project's strategies.

Class sex composition was not a significant controlling factor. It would seem, however, that girls' classes showed more eagerness in locating information, carrying out objective discussion and recording work by themselves.

The school environment variable reveals a significant difference only in the case of Item 7 (The teacher maintaining a balance between factual and thought-provoking questions), rural teachers being more inclined than urban teachers to ask thought-provoking questions.

The explanation of this finding is rather evident; most of the newly-built Junior Secondary Schools are in fact in rural areas, and such schools are staffed with qualified teachers (Diploma holders and Degree holders).

The general impression, then is that teachers' sex, school environment, and class sex composition and, to a lesser extent, years of teaching experience exert little effect on the implementation of the Project's main characteristics.

Table B10: Differences among Teacher Sub-groups in the Implementation of the Project's main features

Features of New Curriculum	*Teacher Sex*	*School Environment*	*Class Sex Composition*	*Teacher Qualifications*	*Years of Experience*
1. Making lesson objectives clear	$\chi^2 = 7.29$ $d.f = 3$ n.s.	$\chi^2 = 2.52$ $d.f = 3$ n.s.	$\chi^2 = 5.34$ $d.f = 6$ n.s.	$\chi^2 = 28.59$ $d.f = 6$ ***	$\chi^2 = 13.34$ $d.f = 3$ **
2. Equal contribution of teacher and class	$\chi^2 = .58$ $d.f = 3$ n.s.	$\chi^2 = 2.21$ $d.f = 3$ n.s.	$\chi^2 = 3.41$ $d.f = 6$ n.s.	$\chi^2 = 22.99$ $d.f = 6$ ***	$\chi^2 = 7.936$ $d.f = 3$ *
3. Supplementing pupils' textbook	$\chi^2 = 1.86$ $d.f = 3$ n.s.	$\chi^2 = 1.09$ $d.f = 3$ n.s.	$\chi^2 = 4.83$ $d.f = 6$ n.s.	$\chi^2 = 19.56$ $d.f = 6$ **	$\chi^2 = 7.99$ $d.f = 3$ *
4. Using visuals	$\chi^2 = 6.39$ $d.f = 3$ n.s.	$\chi^2 = 3.49$ $d.f = 3$ n.s.	$\chi^2 = 9.11$ $d.f = 6$ n.s.	$\chi^2 = 21.2$ $d.f = 6$ ***	$\chi^2 = 10.75$ $d.f = 3$ **
5. Locating information	$\chi^2 = 2.57$ $d.f = 3$ n.s.	$\chi^2 = .78$ $d.f = 3$ n.s.	$\chi^2 = 12.33$ $d.f = 6$ *	$\chi^2 = 13.75$ $d.f = 6$ *	$\chi^2 = 13.11$ $d.f = 3$ **
6. Developing ideas and concepts	$\chi^2 = 5.5$ $d.f = 3$ n.s.	$\chi^2 = .08$ $d.f = 3$ n.s.	$\chi^2 = 4.71$ $d.f = 6$ n.s.	$\chi^2 = 35.13$ $d.f = 6$ ***	$\chi^2 = 5.45$ $d.f = 3$ n.s.

Features of New Curriculum	*Teacher Sex*	*School Environment*	*Class Sex Composition*	*Teacher Qualifications*	*Years of Experience*
7. Keeping a balance between factual and thought-provoking question.	$\chi^2 = 6.14$ $d.f = 3$ n.s.	$\chi^2 = 11.01$ $d.f = 3$ **	$\chi^2 = 4.99$ $d.f = 6$ n.s.	$\chi^2 = 33.00$ $d.f = 6$ ***	$\chi^2 = 6.42$ $d.f = 3$ n.s.
8. Carrying out discussion work	$\chi^2 = 7.91$ $d.f = 3$ *	$\chi^2 = 3.44$ $d.f = 3$ n.s.	$\chi^2 = 7.38$ $d.f = 6$ n.s.	$\chi^2 = 39.44$ $d.f = 6$ ***	$\chi^2 = 2.23$ $d.f = 3$ n.s.
9. Clarifying pupils' attitudes	$\chi^2 = 4.88$ $d.f = 3$ n.s.	$\chi^2 = 2.64$ $d.f = 3$ n.s.	$\chi^2 = 9.59$ $d.f = 6$ n.s.	$\chi^2 = 13.09$ $d.f = 6$ *	$\chi^2 = 2.30$ $d.f = 3$ n.s.
10. Aiming at objectivity in discussion	$\chi^2 = 6.21$ $d.f = 2$ *	$\chi^2 = 3.40$ $d.f = 2$ n.s.	$\chi^2 = 15.64$ $d.f = 4$ **	$\chi^2 = 16.77$ $d.f = 4$ **	$\chi^2 = 4.68$ $d.f = 2$ n.s.
11. Pupils' freedom in recording work	$\chi^2 = 7.02$ $d.f = 3$ n.s.	$\chi^2 = 3.97$ $d.f = 3$ n.s.	$\chi^2 = 17.08$ $d.f = 6$ **	$\chi^2 = 12.34$ $d.f = 6$ *	$\chi^2 = 5.29$ $d.f = 3$ n.s.
12. Helping pupils to understand textbook content	$\chi^2 = .018$ $d.f = 1$ n.s.	$\chi^2 = 1.01$ $d.f = 1$ n.s.	$\chi^2 = 3.12$ $d.f = 2$ n.s.	$\chi^2 = 3.81$ $d.f = 2$ n.s.	$\chi^2 = .707$ $d.f = 1$ n.s.

Categories of Implementers

An intercorrelation of all twelve items on the Evans/Behrman Schedule was carried out as a basis for establishing a classification of teachers into categories of implementers. Chi-square tests were run for this purpose and the results are tabulated in Table B11 below. An example of these cross-tabulations is provided in Table 5(c) in Appendix II.

B11: Intercorrelation of Items on the Evans/Behrman Schedule (Probability levels)

-	1	2	3	4	5	6	7	8	9	10	11	12
1	I	.000	.115	.000	.000	.000	.008	.092	.376	.187	.000	.003
2		I	.032	.002	.000	.000	.000	.000	.042	.063	.000	.002
3			I	.058	.110	.003	.000	.001	.040	.017	.018	.305
4				I	.000	.001	.016	.030	.601	.302	.168	.009
5					I	.001	.029	.026	.666	.431	.000	.000
6						I	.000	.001	.383	.064	.052	.003
7							I	.000	.006	.000	.100	.218
8								I	.000	.000	.049	.397
9									I	.000	.019	.920
10										I	.022	.677
11											I	.017
12												I

The pattern of intercorrelations which emerges from that table reveals, in general, a large number of correlations showing no relation between behavioural categories, with a small contrasting group of moderate correlations.

It would be very difficult to establish a classification of teachers into categories of implementers on such a basis. Therefore recourse was made to factor analysis. Factor analysis could help by taking the first step of summarizing the data in an appropriate way.

Factor analysis was considered to be a rational and convenient procedure for establishing a basis on which teachers could be assigned to low, medium and high implementers. Factor analysis is a complicated mathematical procedure that virtually requires the use of a computer. The method used in this study was the principal components analysis with varimax rotation, and it was applied on the computer, using Nimbus Programme N X 72.

This technique is used conservatively since the rotated components resulting from this analysis cannot be regarded necessarily as the optimal one for these specific data. Scores from different raters were used to assess what were essentially single measures, and, in combination, could well weight certain parts of the underlying variance disproportionately. While stressing the need for caution in the use of this technique, it is also interesting to point out that the analysis does offer a statistically-founded procedure which obviates the danger of using intuition/logical scales for classifying teachers, which might not have much interrelationship.

The varimax analysis was carried out on the twenty-one variables of F.I.A.C. and the thirty-six variables of the Evans/Behrman Schedule. Only two variables were eventually excluded, the first and third ratings on the Evans/Behrman Schedule, Item 12, as these have zero variance; the total of variables considered was thus 57. The analysis started with the computation of correlations between these variables and the turning of these correlations into factor loadings, which can be most easily understood as *"the correlations between each variable and each factor"* (Furneaux et al, 1973)[4]. Factor analysis can be thought of as *"a geometric representation of these correlations"* (Brown and Weisberg, 1980)[5]; it tells us how many factors are necessary in order to account for the relationship in the correlation matrix.

Table B12 illustrates six of the hypothetical factors which can be used to explain the correlations between the variables. There are, in fact, fifteen significant factors from the principal components analysis. After factor I (26 per cent of the variance), the factors fall off remarkably in size. Factor II includes 9 per cent, Factor III 6 per cent, Factor 5 per cent etc. ... Factor I is both the largest and the most global; it includes the variance of both F.I.A.C. and Evans/Behrman Schedule. A complete table of factors I to IX is given in table 6(a) in Appendix II.

Table B12: Varimax analysis of Main Factors derived from Correlation Matrix across 55 Variables

Observational Schedules	*Variable*		*Factor I*	*Factor II*	*Factor III*	*Factor IV*	*Factor V*	*Factor VI*
Evans/Behrman	(Item 1)	1						
3 Raters' scores		2				64		
		3	- 39					
	(Item 2)	4	- 54			30		
		5	- 50					- 39
		6	- 32			27		
	(Item 3)	7	- 34			57		
		8				36		
		9				62		
	(Item 4)	10	- 35					
		11	- 36					
		12						
	(Item 5)	13	- 46					
		14						- 33
		15	- 55					
	(Item 6)	16	- 35			37		
		17						- 34
		18				41		
	(Item 7)	19	- 39			58		
		20						
		21				78		

Observational Schedules	*Variable*		*Factor I*	*Factor II*	*Factor III*	*Factor IV*	*Factor V*	*Factor VI*
Evans/Behrman	(Item 8)	22					45	
3 Raters' scores		23	- 31	- 35			31	
		24						
	(Item 9)	25					85	
		26						
		27						
	(Item 10)	28						
		29		- 68				
		30		- 35				
	(Item 11)	31						
		32						
		33						
Evans/Behrman	(Item 12)	34						- 76
1 Raters' scores								
Flanders' Interaction		35	65					
System		36		- 72				
		37	- 83					
1st Rater's scores		38	88					
		39	- 85					
		40						
		41			72			

Observational Schedules	*Variable*	*Factor I*	*Factor II*	*Factor III*	*Factor IV*	*Factor V*	*Factor VI*
Flanders' Interaction	42	67		- 57			
System	43		- 69				
2nd Rater's	44	- 88					
Scores	45	87					
	46	- 83					
	47		- 78				
	48			75			46
3rd Rater's	49	73					
Scores	50		- 59				
	51	- 78					
	52	81					
	53	- 69		- 38			
	54		- 85				
	55			86			
Eigen-Values		14.29	4.71	3.29	3.05	2.50	2.20
Proportion of Total Variance		26%	9%	6%	5%	etc.	

The meaning of the factors can be interpreted in terms of high factor loadings regardless of the positive or negative sign. The latter simply illustrates the direction of the relationship that each variable holds with the factor. Thus the first factor has high loadings on a large number of variables, especially on the F.I.A.C. F.I.A.C. variables 3, 4 and 5 load most heavily on this factor, with F.I.A.C. category 1 next in order of size. These loadings, however, vary in direction: F.I.A.C. categories 1 and 4 load positively, 3 and 5 negatively. A number of the Evans/Behrman variables have smaller significant loadings on this factor.

Moving on to Factor II, it can be seen that it complements the picture, in that its highest loadings come from F.I.A.C. category 2 and 6. These 2 categories load in the same direction. Generally speaking, the contribution made by the Evans/Behrman variables to this factor is not significant, although item 10 has significant loadings.

Factor III is specific for F.I.A.C. variable 7. Again, the Evans/Behrman variables do not make a contribution. Factor 4 is specific to certain of the Evans/Behrman variables (1, 2, 3, 6 and 7).

The varimax method of factor analysis, as used here, provides a rotated solution, that is to say, the amounts of variance attributed to each factor, are spread equally among the factors. It is notable, however, that the first factor accounts for a great proportion of the total variance 26 per cent in comparison with 9 per cent for the second factor, 6 per cent for the third factor and 5 per cent for the fourth factor. In other words despite the rotation, a strong general factor appears to predominate in the data, and there is a gradual decrease of the amounts of variance from Factor I to the the other factors.

The task in relationship to setting up a criterion for dividing the teachers in categories of implementers, is to establish a basis which is both relatively straight-forward and draws on the two observations instruments - F.I.A.C. and Evans/Behrman Schedule. As Factor I is the largest and the most global (including the variance of both instruments) it seems the best basis for classifying teachers. It has loadings from both F.I.A.C. and Evans/Behrman Schedule as illustrated in Table B12.

This factor therefore can be used like a scale, and the scores of individual teachers can be computed. These are the factor scores and it would seem reasonable to use these as a basis for classification. It contains a disproportionate amount of whatever is being measured by the Flanders' system and the Evans/Behrman Schedule (26 per cent) compared to the other components; and although predominantly a F.I.A.C. component, the Evans/Behrman Schedule items make a modest but pervasive contribution.

A cut-off for identifying teachers into the three categories of high, medium and low implementers was determined empirically by inspection: the total range of factor scores was examined in the light of the need for relative discrimination among the implementation categories. The value of $\pm$ .6 was decided as a cut-off which yielded the *"extreme"* implementation groups with approximately equal numbers in each, and which left a larger group of medium implementers falling between $\pm$ .6. Above .60 all factors scores were considered to be significant, and the factor scores were coded high; below .60, they were insignificant and were coded low. Due to the conventions of the positive/negative signs resulting from the analysis, a high factor score identifies a low implementer, a low factor score a high

implementer. Consequently, using the cut-off point of ± .60, 21 low implementers, 37 middle implementers and 22 high implementers were identified. Table B13 below illustrated the use of this cut-off point in the classification of teachers.

Table B13: Classification of Teachers on the Basis of Scores of Factor I

High factor scores + .60
Low factor scores - .60

Case	*Factor I Scores*	*Case*	*Factor I Scores*	*Case*	*Factor I Scores*	*Case*	*Factor I Scores*
1	66	21	1.12	41	1.55	61	1.11
2	- 80	22	78	42	93	62	- 83
3	1.43	23	- 1.00	43	35	63	- 14
4	86	24	81	44	- 65	64	- 79
5	- 20	25	- 25	45	- 44	65	- 40
6	88	26	- 01	46	51	66	- 1.26
7	- 44	27	- 99	47	- 1.59	67	- 57
8	20	28	- 70	48	2.61	68	1.20
9	- 41	29	- 1.27	49	64	69	- 11
10	- 29	30	- 28	50	09	70	- 13
11	1.22	31	- 1.20	51	3.18	71	08
12	- 1.27	32	09	52	- 21	72	- 1.28
13	93	33	39	53	1.81	73	- 92
14	- 15	34	39	54	1.47	74	- 11
15	24	35	50	55	42	75	- 37
16	- 49	36	42	56	- 43	76	- 69
17	- 09	37	30	57	- 1.66	77	- 1.58
18	- 32	38	42	58	39	78	- 2.56
19	- 81	39	- 1.17	59	1.82	79	01
20	80	40	- 1.50	60	63	80	- 71

The following case numbers identify the high, medium and low implementers.

Table B14: The 3 Categories of Implementers based on Factor Analysis (80 Cases)

Low Implementers	*Medium Implementers*		*High Implementers*
Cases = 21	*Cases = 37*		*Cases = 22*
1	5	38	2
3	7	43	12
4	8	45	19
6	9	46	23
11	10	50	27
13	14	52	28
20	15	55	29
21	16	56	31
22	17	58	39
24	18	63	40
41	25	65	44
42	26	67	47
48	30	69	57
49	32	70	62
51	33	71	64
53	34	74	66
54	35	75	72
59	36	79	73
60	37		76
61			77
68			78
			80

It is interesting to compare the results of this factor analysis with Table B7 which illustrates the results of classification based on the correlation matrix of the F.I.A.C. variables. There is a high degree of overlap between the case numbers, although as stressed earlier, the factor analysis is the basis chosen as giving a clear cut-picture of the categories of implementers.

The classification of teachers into high, medium and low implementers on the basis of observation data, serves to describe the variety of behaviours exhibited by individual participants in the new programme. Within these three categories, the teachers were using the innovation to suit the unique needs of their particular institutional setting. To some extent, therefore, it can be claimed that this classification illustrates the *"levels of use"* of the new programme. Ideally, an application of the LOU model advocated by Hall and Loucks (1977)[6] and refined by Leithwood and Montgomery (1980)[7] might have provided a clearer picture of the incomplete and non-uniform implementation which was taking place.

However, it was recognised that combining the dimensions of the innovation programme with the need to understand levels of use for each of these dimensions, was an unwarrantly complex task to undertake within the scope of this study. Moreover, the need to add to the levels-by-dimensions profile a third aspect, namely the variety of sources of information, also served to discourage the use of the refined LOU procedure.

Characteristics of the Categories of Implementers

The factor analysis thus yielded three main groups of teachers implementing the new curriculum. These three groups of implementers are named respectively *"high"*, *"medium"* and *"low"*. The descriptions of each category of implementers that follow, are based particularly on the variation on the use of the F.I.A.C. categories of teacher-pupil interaction. As stressed earlier, component 1 which has been set up as the criterion for classifying teachers, is predominantly a F.I.A.C. component and is defined by a combination of high total

teachers talk and teacher lecture together with low teacher questioning and pupil talk. The Evans/Behrman Schedule items make a modest but pervasive contribution to this component. Low ratings on this schedule (significantly in the case of items 2, 4 and 5 and not significantly in the case of items 1, 3, 6, 7 and 8) are also characteristics of component 1.

The main characteristics of each of the three groups of implementers are briefly as follows:

1. *High Implementers*

This group accounts for 27 per cent of the sample and is characterized by a low level of teacher talk and teacher lecture together with a high level of teacher questioning and pupil talk. This group devotes a significant proportion of time to encouraging pupils to initiate and express ideas and to answering questions. Questioning is used substantially during discussion, and the questions are both factual and open-ended. Such teachers make an attempt at prolonged interaction with their pupils.

The pattern which emerges from the Evans/Behrman observation Schedule is of teachers who try to make their lesson objectives clear to the class, supplement the textbook content, encourage their pupils to find information from a variety of sources, use a reasonable number of visual devices, and encourage discussion at all levels in the classroom. However the handling of value issues or controversial issues is generally avoided even by this group of teachers although a few of these teachers do make some efforts to incorporate value discussions into their instructions. Observers' descriptive accounts indicate that such teachers move a lot round the class, or from group to group if the class is organised this way for group discussion.

2. *Medium Implementers*

This group comprises 47 per cent of the sample, and they maximise the use of questions. The questions are mostly related to the textbook content and are mainly of the closed or convergent type. Unlike the high implementers, these teachers do not encourage the pupils to ask questions nor to initiate ideas. They always ask the questions themselves and solicit pupils' answers, sometimes by giving clues signalling what the appropriate answer is likely to be.

Since most of the lessons are devoted to the discussion of factual information related to the topic, it is not surprising that value issues are very rarely explored by these teachers.

Data from the Evans/Behrman Schedule confirm this finding and also indicate that these teachers make some efforts occasionally at clarifying their lesson objectives, at using extra information to supplement the textbook content and at using adequate visuals.

Observers' descriptive accounts indicate that this group of teachers move sometimes around the class when motivating individual pupils to answer questions.

3. *Low Implementers*

This group consists of 26 per cent of the teachers, and has the highest level of teacher talk and lecture. Members of this group tend to lecture most of the time and to use very few questions, all factual, to check the class power of assimilation. The strategy of this group is formal class teaching, based on the use of the textbook as the main source of information and on the neglect of supplementary information.

The predominant use of exposition by these teachers helps to ensure that next to the textbook, they are the second main source of information in the classroom. Since they always insist on their answers of questions as being the correct ones, such teachers never venture into open questioning. They spend some time on giving dictated notes, or explaining every question in the textbook. Such teachers always tend to have a frontal position in the classroom.

It is worth stressing here that category boundaries within a continuous distribution are bound to be arbitrary, and therefore there is a high degree of overlap between these groups of implementers.

Further Information on the Implementers of the new Curriculum

Some additional information about the teachers implementing the new programme in the observed classrooms is given in Table B15.

Table B15: Distribution of Teachers' Qualifications, Sex and Years of Experience in each Category of Implementers

	High Implementers	*Medium Implementers*	*Low Implementers*
1. Qualifications			
(a) Unqualified	7	15	14
(b) Diploma-Holders	11	12	5
(c) Degree-Holders	4	10	2
2. Sex			
(a) Male	7	16	13
(b) Female	15	21	8
3. Years of Experience			
(a) 1 - 5 years	11	22	15
(b) 5 - 10 years	7	9	1
(c) 10 - 15 years	4	6	5

Chi-square tests were run to test for significant differences between teachers' qualifications, sex and years of experience and the categories of implementers; the results are tabulated below:

Table B16: Association between Teacher Characteristics and Categories of Implementers

Characteristics	*Chi-square value*	*Inference*
(a) Qualifications	$\chi^2 = 6.864$ $d.f = 2$	*
(b) Sex	$\chi^2 = 4.015$ $d.f = 4$	n.s.
(c) Years of Experience	$\chi^2 = 1.896$ $d.f = 2$	n.s.

The previous results have demonstrated that qualifications are the only attribute affecting classroom implementation of the new programme. This is confirmed by the results in Table B17. The qualified and trained teachers are better implementers of the new curriculum than the unqualified group. Evidence from the teacher Questionnaire data does support this finding. Differences in sex and in years of teaching experience make no apparent impact on the teacher implementation process.

General Summary and Conclusions

The analyses reported in this chapter were concerned with the degree and the process of implementation within the classroom observed. The data were derived from systematic and detailed observation of what actually went on in those classrooms. The results of this analysis were conclusive to some extent, and the following conclusions can be drawn:

1. The general impression was that teacher sex, class sex composition, school environment, and school types have little relationship with implementation. The only variable which was significantly related to implementation was teacher qualifications. This variable had a consistent bearing upon teacher performance in the classroom. High implementation was associated with qualified and trained teachers, and low implementation with unqualified teachers. This finding is particularly interesting since it was found in the analysis of the teacher questionnaire data that Diploma holders and to a lesser extent Degree holders were more *"at home"* in the implementation of the new curriculum. This can be held to support the notion that teacher training is important in the implementation of a new curriculum.

2. The teachers were classified into three groups of implementers, namely high, medium and low implementers. The criterion for dividing teachers in terms of implementation was based on a factor analysis which particularly implicated F.I.A.C. variables. Thus, high implementers were defined by a combination of low teacher talk and teacher lecture, together with high teacher questioning, teacher response and pupil talk (both solicited

and unsolicited). A high percentage of teacher talk and lecture, with a low rate of teacher questioning and pupil talk, denote the low implementers' group.

The contribution made by the variables of the Evans/Behrman Schedule to this classification was relatively modest. As stressed earlier the classification of teachers into high, medium and low implementers is bound to be arbitrary; it must be admitted that the performance of the high implementers or of the medium implementers was not as good as might be expected.

3. There was no important shift towards a modified inquiry learning as advocated by the Project. This guided discovery model stresses the active role pupils take in exploring knowledge, while the teacher's role is to interact with pupils to clarify their inquiries and to bring the class to the body of knowledge as determined in the curriculum materials. The results indicate a strong focus on talk by the teachers, even among the group of high implementers. Furthermore, a high proportion of talk was devoted to lectures. Since these observations were based on an adequate sample of teachers (roughly 33 per cent of the island's population), it was considered an important task to identify factors which may account for the discrepancy between the Project's rationale and classroom practice.

4. The structure of the majority of classes was such that it helped the teacher to dominate. The entire class was usually kept as an intact group, on a row to row-desk arrangement. Such an organisation reinforced traditional interaction patterns: it was easier for the pupils to talk to the teacher; pupils rarely

talked or listened to other pupils; frequently they could not hear what other pupils said.

5. Much of the Social Studies teaching observed is expository in nature. The lecture was the predominant method used by the bulk of the teachers observed. There was thus an apparent discrepancy between what was advocated in the pupils' and teachers' materials and what was observed in the real situations. It seems reasonable to explain the widespread use of the lecture by the inadequate skills of the teachers or their failure to have understood the Project's rationale. Another interesting explanation which cropped up in the course of interviews with some teachers, is that they found it difficult to accept the idea that they should not be the primary source of information in the classroom, especially in the examination-conscious atmosphere prevailing in the island.

6. Next to lecturing, questioning was the second kind of teacher talk which frequently occurred. Teachers always asked questions; pupils virtually never asked any questions. Most of the questions were of the convergent type. On the rare occasions that divergent questions were asked among the group of high implementers, it was observed that the teacher had either already decided upon an answer, or was not confident enough to involve pupils in thinking and reasoning. The majority of teachers did not appear keen to venture too far into asking open questions which gave rise to uncomfortable situations in the classrooms.

7. All three groups of implementers (high, medium and low) did not concentrate on the value objectives which they themselves considered to be most important. Two possible reasons could contribute to this lack of focus on the teaching of value issues in the classroom. First, evidence from the Teacher's Questionnaire data revealed that teachers were not too clear about how to implement these objectives which are new to them. Secondly, informal talk and discussion showed that teacher realised that they would not get any recognition or credits for their efforts if they did focus on the attitude objectives in the classroom. Teachers' performance tended to be evaluated primarily in terms of the number of examination passes their pupils obtained, and a pupil's merit was almost entirely judged in this way. The teachers were always under pressure to provide in some way a body of knowledge for such examinations as the students had to take.

Moreover, it was also recognised that the treatment of value issues required more time than the teaching of knowledge and skills.

It is obvious that points 3, 4, 5, 6 and 7 are essentially negative aspects of the implementation process. There was a considerable "lack of fit" between Project's intentions and classroom practice. The above does not, of course, describe every lesson which had been observed. At times, the observers saw some good teaching which reflected enquiry techniques and the intentions of the new curriculum, but more frequently they saw much to the contrary.

This chapter has presented evidence bearing directly on the two hypotheses outlined in Chapter I. The relevant points that these data bring out, have already been mentioned in some details, and they need only summarizing briefly here.

1. It was predicted that trained and qualified teachers would be better implementers of the Project's materials than the untrained and unqualified teachers.

   This seemed to be clearly confirmed. In chi-square tests run across F.I.A.C. verbal behaviour categories, the Diploma holders and Degree holders performed significantly higher than the unqualified teachers. The qualification effects are significant in three categories of F.I.A.C. (teacher response at the .05 level, teacher lecture at the .01 level, and pupil initiation at the .001 level).

   Further support for this came from chi-square tests across all twelve items of the Evans/Behrman Schedule which reflects the main characteristics or dimensions of the Project. The qualified teachers were more inclined to implement the Project's features than the unqualified ones. The qualifications effects are significant in the case of eleven items (6 of them at the .001 level, 2 at the .01 level and 3 at the .05 level). A similar finding was obtained from factor analysis which was carried out to classify teachers into categories of implementers. More qualified teachers fit into the group of high implementers.

2. The second hypothesis was that a great deal of adaptation of the Project's materials would take place in the classroom, and that teachers would pay more attention to the features of the

curriculum which are consistent with existing practices rather than to those features which are new.

The results here were quite conclusive. The data from the Evans/Behrman Schedule indicate that teachers (qualified as well as unqualified) were, in fact, not implementing features of the Project which represent a great departure from standard classroom practice. For instance, the treatment of value issues, the handling of objective discussion and the development of ideas, concepts and generalisations were most of the time ignored by the teachers.

3. Finally, it was predicted that the unqualified teachers would favour adaptations of the Project to their own needs without significantly modifying their own behaviour in accordance with the Project's intentions much more than the qualified teachers.

This was borne out by the data from both observation schedules. The unqualified teachers were more inclined to use the expository style of teaching and thereby to modify the new curricular intentions to suit this style of teaching.

Questions 5 and 8 have thus been answered conclusively by the data presented in this Chapter. Briefly they are as follows:

Question 5: To what extent are the intended role changes implemented in the classroom?

The evidence thrown up in this chapter points to the lack of concordance between the Project's intentions and classroom practice. The data suggest that trained and qualified teachers are better implementers of the intended role changes than the unqualified group.

However, it must be admitted that even these high implementers are not performing as might be expected. In other words, generally speaking, classroom practice is not positively related to fidelity of implementation. Since the new curriculum is not being implemented as originally planned, it can well be concluded that the degree of implementation is relatively low in some settings and moderate in others.

Question 8: What happens in the school context when the new curriculum is being implemented?

The analyses indicate that through the extent to which teachers are using the key features of the new curriculum, they are adapting the innovation to their own classroom needs. The type of implementation process which is taking place is one which approximates fairly well to mutual adaptation. Teachers are, in fact, selecting features of the innovation which are consonant with existing practices; they are revising the Project's objectives and its expectations for role changes in the classroom.

The next stage in this study is to examine pupils' perceptions of their teachers' implementation strategy and, if possible, the relationship between these perceptions and the teachers' actual performance in the classroom.

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CHAPTER V

RESULTS III: PUPILS' PERSPECTIVES

Integral to the concept of the process of implementation as well as that of illuminative evaluation is the conviction that pupils in their capacity as involved participants in an innovative curriculum programme, are entitled to their own interpretations and views. With this idea in mind, it was decided to administer a Pupil Questionnaire to some 1 900 Form III pupils, representing 11.2 per cent of the schools' Form III population in 1980.

This section of the results deals with pupils' perspectives and covers the following questions in Chapter I:

Question 6: What is the relationship between teachers' preferences regarding the Project's objectives, the pupils' acceptance of these objectives and the teacher's image in the eyes of the pupils?

Question 10: How do the pupils perceive

(a) their teacher classroom implementation strategy

(b) their own attitude towards Social Studies as a school subject?

These broad questions may be put in the form of hypotheses, and the answer may be predicted on both theoretical and empirical grounds. Theoretically, the answer to question 6 would seem to be fairly straightforward. It has been shown in Chapter III that the way teachers ranked their objectives in order of priorities, depended somehow on their qualifications and training. However, it is not expected that teachers' qualifications will have an effect on the

pupils' own ranking of objectives. In fact, it is predicted that teachers' priorities will not equate with pupils' priorities. Pupils' ranking will be made on the basis of their perception of what was actually happening in their classroom. The analysis of the classroom observation data in Chapter IV has revealed a discrepancy between teachers' ranking of objectives and their actual implementation of these objectives. It may, thus, be hypothesized that (i) teachers' priorities of objectives are likely to differ from those of the pupils, but that pupils' priorities or their acceptance of these objectives would depend on their perceptions of their teachers' ranking of these objectives. Regarding pupils' perception of their teacher classroom implementation strategy, it is expected

(ii) that pupils could reveal a well-balanced picture of their teacher classroom strategy through proper identification of the positive and negative pairs of statements which describe aspects of implementation strategies.

(iii) It is also expected that pupils of qualified teachers will be able to perceive more clearly their teacher implementation strategy than pupils of unqualified teachers and

(iv) that pupils of high implementers will be superior to pupils of the other groups of implementers in such perceptions.

(v) Finally, class sex composition is not expected to show differences in perception amont the pupils. With regard to the pupils' perception of Social Studies as a school subject, it is hypothesized that

(vi) the majority of pupils will show a positive attitude to the subject and will strongly oppose its discontinuation

at Form III level. The teachers' expression of concern about such a discontinuation has emerged very clearly from Chapter III. It would be expected, therefore, that they might have passed on a similar feeling to their pupils.

The results of the survey as regards responses of the various sub-groups of pupils are summarised in Table C1.

Table C1: Distribution Replies
Total No. of replies (N = 1 907)

	%
Pupil Sex:	
Male	45.4
Female	54.6
School Type:	
State	10.7
Junior Secondary Schools	20.1
Private	69.2
School Environment:	
Rural	45.3
Urban	54.7
Class Composition:	
Male	23.5
Female	35.8
Mixed	40.7
Teacher Sex: (N = 53)	
Male	51.2
Female	48.8
Teacher Qualifications:	
Unqualified	35.9
Diploma Holders	46.5
Degree Holders	17.6

Tables of frequencies of these variables are provided in Appendix II (Tables 7(a) to 7(f).

Question 1 of the questionnaire deals with a series of fourteen statements which were used to represent the main features of the Project's implementation strategy. Seven such features were identified, and for each feature, two statements intended to represent the positive and negative aspects of these features were used. These fourteen statements are as follows:

1. Our teacher always gives the information we need.
2. In class we read the Social Studies textbook so as to know its context.
3. Our teacher asks questions that compel us to think a lot before we answer.
4. We are given sufficient time in class to discuss certain problems of society.
5. We have to find information on our own sometimes.
6. We bring pictures and other materials of our own in the classroom.
7. We seldom discuss the problems of man in society in our class.
8. On certain occasions, we carry out visits or surveys outside the schools.
9. In class we sometimes use books, and reading materials other than our textbook.
10. We spend much of our time in the Social Studies lessons listening attentively to our teacher.
11. The questions that we are asked in class are mainly to explain what our book has told us.

12. Our homework includes reading out of the textbook or writing answers to questions in our book.

13. The teacher is responsible for preparing the classroom pictures and charts.

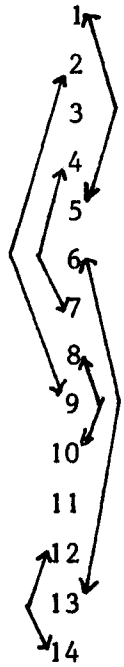
14. As part of our homework, we look for other sources of information, or carry out our own investigation.

Sub-items 3, 4, 5, 6, 8, 9 and 14 are judged to be in agreement with the Project's implementation strategy, while the remaining items represent unfavourable aspects of implementation.

The overall frequency chart on the next page (C2) shows that over 60 per cent of the pupils give a high *"TRUE"* rating to 5 of the sub-items judged to be in agreement with the Project's strategy. On the other hand, sub-items 8 and 9 were given a rating of less than 60 per cent, implying that teachers had reservations about carrying out visits and surveys and supplementing the textbook, but that otherwise they were implementing the Project more or less satisfactorily. However, the trend of high *"TRUE"* rating was also maintained in the case of sub-items which are judged to be negative aspects of implementation, as the chart illustrates.

C2: Overall Frequency Distribution of Responses to Question 1

Sub-Items		True (%)	False (%)
1		86.6	13.4
2		68.2	31.8
3	+	67.6	32.4
4	+	67.9	32.1
5	+	88.7	11.3
6	+	75.9	24.1
7		50.3	49.7
8	+	42.1	57.9
9	+	53.9	46.1
10		69.0	31.0
11		70.5	29.5
12		61.0	39.0
13		27.2	72.8
14	+	85.8	14.2



\+ Sub-items judged to be in agreement with Project's implementation strategy.

Pairs of positive/negative items.

The conclusions that may be drawn from Chart C2 are necessarily ambiguous. At best it would be easy to conclude that according to the pupils perspectives, the teachers' classroom strategy is partly in line with the Project's rationale and partly against it. However, the fact that each positive statement was counter-balanced by a negative statement points to confusing trends in the pupils' perceptions.

It would be interesting, therefore, to analyse the extent to which pupils had established the relationships between each pair of positive/negative sub-items. Logically speaking, the rating given for a positive sub-item should be automatically related to the rating given for its negative counterpart. The perfect *"theoretical"*

rating is as follows: sub-items 1 and 5; 2 and 9; 3 and 11; 4 and 7; 6 and 13; 8 and 10; 12 and 14.

A comparison of the overall frequency distributions of the responses was first made to understand the intercorrelation of these seven pairs of sub-items by the entire sample of pupils. It is obvious from Chart C2 that the perfect intercorrelation of positive/negative items was achieved only in the case of sub-items 8/10 and 6/13.

Chi-square tests were then computed to find whether agreement could be found in a number of these pairs of items among the various sub-groups of the sample. Multi-way tables were used, controlling for teacher qualification and class sex composition. Examples of these tables are found in Tables 8(a) to 8(c) in Appendix II. Results of agreement between pairs of positive and negative items are charted below.

C3: Agreement between pairs of positive and negative items among sub-groups

Sub-Items	*Teacher Qualification*	*Class Sex Composition*	*Inference*
1 by 5	Unqualified	Male	*
	Unqualified	Female	*
	Unqualified	Mixed	**
2 by 9	Diploma	Female	**
	Diploma	Mixed	*
	Degree	Mixed	***
3 by 11	Degree	Mixed	***
4 by 7	Diploma	Female	*
	Degree	Female	*
6 by 13	Unqualified	Male	*
	Degree	Female	**
8 by 10	Unqualified	Male	*
	Diploma	Male	*
12 by 14	Degree	Mixed	*

The chart on the previous page shows that varying sub-groups of pupils did identify relationships in all seven pairs of items. It might be a fair comment, however, to say that pupils of qualified teachers, especially those of Graduates or Degree-holders seemed to perform better in identifying the intercorrelation of positive and negative sub-items. No firm conclusions can be drawn about the relative effectiveness of class sex composition on pupils' perceptions. There are no grounds for assuming that mixed classes had better perceptions than the male or female classes.

In a further attempt made to see whether teacher qualification was the key variable affecting pupils' ability to identify relationships between positive and negative items, Chi-square tests were computed among the three sub-groups of qualifications. The results are provided in Table C4.

Table C4: Agreement Between Positive and Negative + Teacher Qualifications

Sub-Items	*Teacher Qualifications*	*Inference*
1 by 5	Unqualified	***
	Diploma	n.s.
	Degree	n.s.
2 by 9	Unqualified	n.s.
	Diploma	n.s.
	Degree	**
3 by 11	Unqualified	n.s.
	Diploma	n.s.
	Degree	*
4 by 7	Unqualified	n.s.
	Diploma	n.s.
	Degree	n.s.
6 by 13	Unqualified	n.s.
	Diploma	n.s.
	Degree	n.s.

Sub-Items	*Teacher Qualifications*	*Inference*
8 by 10	Unqualified	n.s.
	Diploma	n.s.
	Degree	***
12 by 14	Unqualified	n.s.
	Diploma	n.s.
	Degree	n.s.

The results seem to indicate that teacher qualification were in fact a significant factor in helping pupils to establish the relationships between pairs of positive and negative sub-items. These results thus confirm the trend observed in Table C3, namely that pupils of Degree holders did relatively better in the identification of intercorrelations between pairs of sub-items. A striking finding, however, is the intercorrelation of one pair of sub-items by pupils of unqualified teachers, and the failure of the Diploma holders pupils to identify any such relationship.

A tentative conclusion would be that only a minority of pupils were making valid perceptions of their teacher classroom strategy, and that since the other groups of pupils did not appear to have performed well in the identification of relationships between sub-items, they did not have a great depth of perception.

The present findings, then, did not support substantially the expectation that pupils could, through proper identification of the relationships between pairs of items, reveal a well-balanced picture of their teacher classroom strategy. However, this lack of agreement between expectation and the data could be due as much to pupils' inability to interpret the data appropriately as to imprecisions in the test itself. In fact, the results of the test would lead one to suspect that the sub-items themselves were insufficiently discriminating in terms of the positive and negative aspects of

implementation, and therefore the responses were not as effective as expected. At the time this item was pre-tested, it was not foreseen that the intercorrelation of pairs of items would create this problem of interpretation.

The findings, then, are somewhat contrary to what was expected. Perhaps the least expected finding as noted earlier, was the poor performance of pupils of Diploma teachers. Such teachers were found to be relatively better implementers of the Project on the basis of the conclusions drawn from the analysis of the teacher and classroom observation data. The poor performance of their pupils can be explained in terms of the lack of clearcut differences between pairs of positive and negative sub-items. Moreover there is also the fact that this group contained a much higher proportion of pupils of low ability level than those of Degree holders. Along this line of reasoning, however, it is incongruous to find that the pupils of low general ability of unqualified teachers did manage to intercorrelate at least one pair of sub-items. This could lead one to conclude that this could just be a chance variation or that there was, in fact, little difference between the perceptions of the various groups of pupils.

Bearing in mind, then, the problem that had cropped up in the interpretation of this test of perception by the pupils, resulting in patterns of perception which are not as distinct as was expected, an attempt will be made at interpreting these results which after all do reveal something about the prevailing classroom strategy. To ensure a more cautious interpretation, the results of the above test will be analysed in conjunction with the responses to each sub-item by the three groups of teacher qualification.

Despite the inadequacies of the analysis, the following conclusions seem justified:

1. All three groups of pupils perceived their teachers as being the main source of knowledge and information. While the pupils of unqualified teachers admitted they had to find information on their own at times, those of qualified teachers seemed quite satisfied with their teacher's expertise. Implicit in this finding is the fact that neither group of pupils seemed to have understood that having to find information on their own was not actually a reflection of the teacher's lack of adequate knowledge. The process of finding their own answers to certain problems by looking for information, was an important skill which the Project was trying to develop. It was clear from pupils' replies that the transmission of information was a major focus of instruction. (Items 1 and 5).

2. Pupils of both unqualified and Diploma teachers admitted that they used their textbook in such a way as to understand its content, presumably for the purpose of repeating it during an examination. Pupils of Degree holders seemed to do more than reading their textbook; they were also using supplementary materials.

   This finding corroborates the first one, namely that the typical task of the teacher was to transmit his or her knowledge and information to the class; he or she was generally assisted in this task by the prescribed textbook. Very few teachers have understood that the task of the teacher was not mainly that of assigning chapters of the textbook to the class (Items 2 and 9).

3. Pupils of unqualified teachers support the fact that their teachers were using mostly questions based on factual recall. Those of qualified teachers were asked questions relating to their knowledge of the textbook substance as well as thought-provoking questions (Items 3 and 11).

4. All three groups of pupils confirmed that discussion work on certain social issues rarely took place in class. The time required to pass on facts was barely adequate to encourage the exchange of views in the classroom. (Items 4 and 7).

5. Pupils belonging to all three groups of teachers agreed that the teacher was not solely responsible for preparing the class visuals. They brought in class pictures and other visuals of their own (Items 6 and 13).

6. All three groups of pupils pointed to the rare occurence of surveys or visits outside schools. The textbook was used to tell the pupils what they should know, and therefore robbed them of the excitement of discovering things for themselves (Items 8 and 10).

7. All three groups confirmed that their homework was most typically one of carrying out the exercises in the textbook. This approach took most of the pleasure of exploring other sources of information (Items 12 and 14).

It is seen that points 1, 2, 3, 4, 6 and 7 above are essentially negative aspects of the implementation strategy used by the teachers.

The Perceptions of Pupils at Different Implementation Levels

The analysis to be reported here was designed specifically to test hypothesis 4 and the results do help to throw light on the results obtained so far in this chapter.

Using the factor analysis results of the classification of teachers into levels of implementers, chi-square tests were run to find the association between the pupils' responses to Question 1 in the questionnaire and the categories of implementers they belonged to. The results of the cross-tabulations are as follows:

Table C5: Pupils' Responses to Question 1 by Categories of Implementers

Items		*Chi-square value with d.f = 2*	*Inference*
1	Teacher always gives the information we need.	$\chi^2 = 20.76$	***
2	In class we read the Social Studies textbook so as to know its content.	$\chi^2 = 43.36$	***
3	Teacher asks questions that compel us to think a lot before we answer.	$\chi^2 = 28.55$	***
4	We are given sufficient time in class to discuss certain problems of society.	$\chi^2 = 42.20$	***
5	We have to find information on our own sometimes.	$\chi^2 = 34.30$	***
6	We bring pictures and other materials of our own sometimes.	$\chi^2 = 7.60$	*
7	We seldom discuss the problems of man in society in our class.	$\chi^2 = 8.96$	**

Items	*Statements*	*Chi-square value with d.f = 2*	*Inference*
8	On certain occasions, we carry out visits outside the schools.	$\chi^2 = 47.52$	***
9	In class we sometimes use books and reading materials other than our textbook.	$\chi^2 = 13.69$	***
10	We spend much of our time in the Social Studies lessons listening to attentively to teacher.	$\chi^2 = 27.47$	***
11	The questions we are asked are mainly to explain what our book has told us.	$\chi^2 = 6.81$	*
12	Our homework includes reading out of the textbook or writing answers to questions in our book.	$\chi^2 = 3.38$	n.s.
13	Teacher is responsible for preparing the classroom pictures and charts.	$\chi^2 = 58.20$	***
14	As part of our homework, we look for other sources of information, or carry out our investigation.	$\chi^2 = 55.10$	***

The overall results point to a strong association between pupils' responses and the categories of implementers by whom they were taught. An attempt was made to identify which categories were responsible for a significant overall chi-square value. The table is illustrated in Appendix II (Table 8d). All the cells are represented adequately and where differences are significant, the pupils of the medium implementers appear to be slightly superior to the high implementers groups in the perception of their teacher's

strategy through the proper identification of positive/negative pairs of items. Closer inspection of the table reveals the following findings:

1. *Item 1:* There are stronger tendencies in the high implementers than in the medium and low implementers to refrain from giving all the information the pupils need.

2. *Item 2:* There are stronger associations between the medium and low implementers and the reading of the textbook in class to know its content.

3. *Item 3:* There are stronger associations between the medium implementers and the use of thought-provoking questions.

4. *Item 4:* There are stronger tendencies in both the high and medium implementers in allowing their class sufficient time to discuss social problems.

5. *Item 5:* The incidence of responses by the three groups of implementers is very alike; all three groups encourage their pupils to find their own information at times.

6. *Item 6:* There are stronger tendencies in the medium implementers in encouraging their pupils to bring pictures and other materials in the classroom.

7. *Item 7:* The three groups strongly deny that they seldom discuss the problems of man in society.

8. *Item 8:* There are stronger associations between medium and implementers and the frequent undertaking of visits and surveys by the class.

9. *Item 9:* Both the high and medium implementers were encouraging the use of books and materials other than the textbook on a larger scale than the low implementers.

10. *Item 10:* There are stronger tendencies in the high implementation in discouraging pupils to listen attentively to them.

11. *Item 11:* All three groups tended to ask questions which are based on the textbook content.

12. *Item 12:* The incidence of responses among all three groups is very alike.

13. *Item 13:* There is a slightly stronger association between high implementers and the fact that the teacher is not responsible for the preparation of pictures and charts.

14. *Item 14:* There are stronger links between high and medium implementers and the encouragement given to pupils to carry out their own investigations as part of their homework.

It may be worthwhile to recall here that sub-items 3, 4, 5, 6, 8, 9 and 14 are judged to be in agreement with the Project's implementation strategy, while the others represent negative aspects of the implementation.

The general direction of the findings, then, is that pupils of both high and medium implementers were more capable of perceiving clearly their teacher implementation strategy than pupils of low implementers. This analysis, then, does provide further evidence for the hypothesis advanced (2 and 3), and in the light of this fresh evidence, a review of the earlier conclusions concerning these hypotheses could be made. Previously it was found that pupils of the various sub-groups of teachers (with the possible exception of the Degree holders group) failed to reveal a well-balanced picture of their teacher classroom strategy either because they could not identify the relationships between pairs of positive and negative items, or because

the items themselves were insufficiently discriminating. However, when pupils belonging to the three categories of implementers are considered, their perceptions produced more initiative results. Pupils of high and medium implementers were superior to the low implementers' groups in identifying the relationships between pairs of items, and thereby in presenting a coherent view of their teacher's implementation strategy, which was found to be in line with the Project's philosophy and rationale. In fact, pupils of medium implementers were found to be slightly superior to those of high implementers in their perception of the teacher's implementation strategy. In three of the seven positive items, the former performed significantly higher than pupils of the high implementers and in six of the items they were relatively higher than pupils of low implementers.

To substantiate these results of chi-square tests, a breakdown analysis was carried out to explore the relationship of levels of implementation to overall class perception of the teacher's implementation strategy. A breakdown of the three categories of implementers by total pupils response in line with the positive/negative demarcation across the fourteen items was carried out. The results are tabulated below.

Table C6: Breakdown of Levels of Implementation x Total Pupil "Correct" Responses

Implementation Level	*Sum of "Correct" Responses*	*Mean*	*Std. Dev.*	*Sums of Squares*
1. Low (N = 462)	3 250.0000	7.0346	1.5387	1 091.4459
2. Medium (N = 784)	5 790.0000	7.3852	1.4559	1 659.6684
3. High (N = 661)	4 766.0000	7.2103	1.5014	1 487.7700
Total (N = 1 907)	13 806.0000	7.2396	1.4977	4 275.4830

Table C6 indicates differences in the three means, with very small differences between the groups of medium and high implementers. A one-way analysis of variance was carried out on these data and the results are illustrated in table C7 below.

Table C7: ANOVA: Level of Implementation x Total Pupil Responses

Source	*Sum of Squares*	*Degrees of Freedom*	*Mean Square*	*F*
Between groups	36.5987	2	18.2993	8.2196
Within	4 238.8843	1 904	2.2263	sig = .0003
Total	4 275.4830	1 906		

The ANOVA results indicate group differences between pupil perceptions at the levels of implementation. The probability that the three means differ merely by sampling error is very small. Therefore it is likely that the between-groups variance estimate was influenced by implementation effects.

The ANOVA results thus confirm the superiority of the pupils of medium implementers in their perceptions of the teacher classroom strategy. As explained earlier in the analysis of the results of chi-square tests, the medium implementers performed better than pupils of high implementers in three of the seven positive items. It is significant, here, to refer again to the arbitrary nature of category boundaries within a continuous distribution, and to the possibility (however slight it may be) that the results are influenced by where the high (medium and medium/ low boundaries are drawn. It is also significant to note that the very large within group variance tends to offset the really very small differences between group means.

A test of linearity was also conducted to determine whether a relationship existed between teacher level of implementation and total perception of pupils, and if so whether the relationship was linear or curvilinear. To help with the interpretation of the results, a brief outline of the method of analysis is given. The method used - that of multiple regression - is to examine the relationship between the independent variable (level of implementation) and a given dependent or criterion variable, such as pupils' perception of their teacher's implementation strategy.

In multiple regression analysis, the basic procedure is to postulate a *"model"* of the way in which the independent variable relates to the depended variable under consideration. In the present analysis, a simple model was postulated. It was one in which the independent variable was regarded as being related in a linear way to the dependent variable. The association between the criterion and the independent variable is reflected in the correlation coefficient R. One way of examining the strength of R is to square it (R^2), giving the percentage of variance in the criterion variable that is accounted for by the independent variable.

The test of linearity is based on the calculation of the between and within sums of squares, using one-way analysis of variance procedures. The results of the test are tabulated below:

*Table C8: Level of Implementation * Total Pupils' Perception*

	Sum of Squares	*Degrees of Freedom*	*Mean Square*
Regression	5.1457	1	5.1457
Dev. from linearity	31.4530	1	31.4530
F = 14.1279	Sig = .0002	R = .0347	R^2 = .0012

The correlation between level of implementation and the criterion of pupils' perception was .03 with R^2 = .0012. The R^2 value was significantly different from zero (F = 14.12, p < .0002). An R^2 value of .00 indicates that 0 per cent of the variability in pupils' total perception was associated with level of implementation.

The results can be interpreted to mean that there is no linear relationship between level of implementation and total pupil perception. There is a marked deviation from the regression line; the data are more approximately described by some curvilinear trend. Basically, the test results indicate that the variables are not well modelled by a linear model.

However, it is not valid to conclude that there was *"no relationship"* between total pupils' perception and level of implementation. Besides, it may be significant to point out, here, that the use of total pupils' perception as a criterion variable carries certain weaknesses. Adding the total *"correct"* responses may not be very sensible since some of the items have been shown to be less precise than others, and also since the positive/negative split is not really borne out by pupils' overall responses.

Therefore, pupils' total perception as a selected criterion, incorporates an element of unreliability and may be an inadequate criterion of level of implementation. This inadequacy in the criterion measure necessarily precludes adequate prediction. Therefore the results of the test of linearity may have to be interpreted with caution.

Question 2 of the questionnaire aims at measuring the pupils perceptions of the Project's objectives and of the relative importance attached by their teachers to these objectives. The same list of nine objectives of Social Studies teaching which was given to teachers for ranking, was also given to the pupils. The pupils were asked to (a) rank these objectives in order of their relative importance as seen by themselves

(b) re-rank these objectives in order of their importance as they would expect their teachers to rank them.

The following list of teaching objectives was administered:

1. Learning facts about man and society.
2. Developing ideas and concepts.
3. Being able to look for various sources of information.
4. Being able to interpret maps, pictures, charts, graphs etc.
5. Being able to work and participate with others.
6. Developing tolerance for cultures and societies different from one's own.
7. Being able to change one's own views in the light of further information.
8. Thinking about one's own attitudes and values.
9. Accepting responsibility in a changing society.

The table on the next page shows the frequencies of pupils-ranking of their priorities, relating to each of the nine objectives:

Table C9: Frequencies of Pupils' Priorities (%)

RANKS	OBJECTIVES								
	1	2	3	4	5	6	7	8	9
1	22.6	19.4	12.6	12.7	11.0	8.7	5.8	3.5	4.0
2	20.6	16.7	15.9	13.5	11.0	8.8	6.7	4.2	2.7
3	14.7	16.0	15.0	12.5	11.2	9.6	9.3	7.5	4.2
4	4.0	8.6	9.0	8.9	11.6	10.1	10.5	13.2	23.9
5	17.9	14.6	13.8	13.2	10.4	9.3	9.0	6.9	5.1
6	8.3	9.8	10.6	12.8	10.4	14.7	13.8	11.4	7.6
7	5.2	6.6	8.3	10.0	12.3	14.2	14.5	16.4	12.7
8	1.8	2.0	5.6	7.4	9.7	10.9	16.9	20.9	25.1
9	5.5	6.2	9.0	9.0	12.3	13.7	13.4	16.0	14.6

The table illustrates some consensus of perception among the pupils, all of them having assigned high priority to some objectives and low priority to others.

By finding the average rank of each objective, the following list of priorities was obtained:

Table C10: Pupils' Priorities

Objectives	*Average Rank*
1	3.6
2	3.9
3	4.4
4	5.0
5	5.0
6	5.3
7	5.7
8	6.2
9	6.1

These results seem to indicate that the pupils considered the learning and recall of facts as very important in Social Studies

teaching. They also appeared to accept the importance of developing ideas and concepts as well as the skills objectives. On the other hand, they did not see the development of the affective objectives in a favourable light.

In an attempt to see whether the pupils assigned their high and low priorities in the light of what they conceived was actually happening in their classroom, a comparison of the pupils' ranking with their perceived teacher ranking, was made.

The latter was obtained by means of the pupils' re-ranking of the objectives. Table C11 illustrates the relative importance allotted to the nine objectives by the pupils and by their perceived teacher priorities.

Table C11: Pupils and Perceived Teacher Priorities

Objectives	*Pupils' Average Rank*	*Perceived Teacher Average Rank*
1	3.6	3.5
2	3.9	3.8
3	4.4	4.4
4	5.0	4.6
5	5.0	4.9
6	5.3	5.2
7	5.7	5.4
8	6.2	6.0
9	6.1	7.4

Pupils' ranking was identical with their perceived teacher ranking. The correlation (rho) between these two rankings is .98, showing a high degree of identification between them.

Again, taking the three groups of pupils divided according to their teacher qualification, rank-order correlations were computed between pupils' ranking and their perceived teacher ranking in order to see whether there is strong agreement between these two rankings among the three groups.

Table C12 shows that the group rank-order correlations were indeed significant, most of them at the .01 per cent level. This indicates that the pupils equated their ranking with those of their perceived teacher rankings. This confirms the trend seen in Table C11, that is, a strong agreement in ranking.

Table C12: Correlation between Pupils' Ranking and Perceived Teacher Ranking across Teacher Qualifications

Objectives	*Groups of Pupils based on Teacher Qualification*		
	Unqualified	*Diploma*	*Graduate*
1	30 ***	39 ***	32 ***
2	08 **	24 ***	21 ***
3	13 ***	22 ***	20 ***
4	14 ***	14 ***	10 ***
5	20 ***	17 ***	18 ****
6	15 ***	22 ***	14 **
7	17 ***	20 ***	19 ***
8	16 ***	23 ***	34 ***
9	23 ***	19 ***	18 ***

(Decimal points omitted)

Low priorities were given by the pupils' ranking and their perceived teacher ranking to objectives in the affective domain. It would thus appear that both pupils and teachers were stressing the need to learn facts for examination purposes. The emphasis of external examinations of which both were aware, might have been responsible for the stress on factual recall. Moreover, previous findings from the teachers' data have made it clear that teachers realized that it was not an easy matter to implement the affective objectives.

Table C13 compares the pupils', the perceived teacher and the teacher average ranking. The good *"spread"* of the pupils' and perceived teacher's ranking as compared with that of the teachers' ranking is quite obvious.

Table C13: Relative Average Ranking Allotted by

Objectives	*Pupils*	*Perceived Teacher*	*Teacher*
1	3.6	3.5	5.1
2	3.9	3.8	5.6
3	4.4	4.4	4.7
4	5.0	4.6	5.5
5	5.0	4.9	5.0
6	5.3	5.2	5.1
7	5.7	5.4	4.7
8	6.2	6.0	4.6
9	6.1	7.4	3.9

Rank order correlations of .82 and .88 were found between perceived teacher ranking and teacher ranking, and between pupil and teacher ranking respectively. However, although the correlations were highly significant, the teachers' priorities were not identical with the pupils' nor with the perceived teacher priorities.

Differences of opinion occurred in objectives 1, 2, 7, 8, 9; the extreme case of divergence of opinion related to objectives 1, 2, 9. *"The learning and recall of facts"* was denied by the teachers (objective 1) but it was given top priority in the pupils' and perceived teachers' ranking. Similarly, *"the development of ideas and concepts"* (objective 2) was rated more highly by the pupils than by the teachers; it featured last in the teachers' list. Marked discrepancies were also found between the pupils' and teachers' ranking of the objectives *"accepting responsibility in a changing society"* (objective 9); it ranked last in the pupils' list but first in the teachers' list. It is interesting to note that all affective objectives which were given top priorities in the upper scale of the teachers' ranking, were ranked very low in the pupils' list.

It was decided to analyse these data on a teacher qualification basis to see how many of the differences of opinion occurred in sub-groups. Table C14 showed the results of rank-order correlations between (a) pupil and teacher ranking,

(b) perceived teacher ranking and teacher ranking among the three sub-groups.

Almost all the rank-order coefficients were far from perfect. They were predominantly non-significant at the 1 per cent level apart from a few instances. There were negative correlations between pupils' and teachers' ranking among all three groups of pupils. This indicates that irrespective of teacher qualifications, pupils' rankings are not equated with teachers' rankings.

Table C14: Rank-Order Correlations Between

Objectives	Pupil and Teacher Ranking			Perceived Teacher and Teacher Ranking		
	Unqualified	Diploma	Graduates	Unqualified	Diploma	Graduates
1	09 **	04 *	- 21 ***	00 n.s.	07 **	- 11 *
2	10 ***	- 03 n.s.	- 00 n.s.	09 **	- 00 n.s.	00 n.s.
3	02 n.s.	01 n.s.	- 18 n.s.	06 n.s.	06 *	- 09 *
4	- 05 n.s.	- 00 n.s.	- 01 n.s.	- 03 n.s.	06 *	00 n.s.
5	- 02 n.s.	- 01 n.s.	06 n.s.	02 n.s.	- 00 n.s.	08 n.s.
6	- 03 n.s.	- 05 n.s.	- 02 n.s.	- 03 n.s.	- 04 n.s.	06 n.s.
7	09 **	07 *	04 n.s.	- 02 n.s.	08 **	01 n.s.
8	- 07 *	- 01 n.s.	- 09 *	09 **	- 05 n.s.	- 17 **
9	00 n.s.	01 n.s.	18 ***	13 **	- 04 n.s.	- 03 n.s.

(Decimal points omitted).

Thus, the similarity in the perceptions of all three groups of pupils based on teachers' qualifications is in keeping with the finding on the first question. An attempt was also made to find whether there was an association between pupils' perceptions of objectives and the teachers' level of implementation.

Chi-square tests were thus run between pupils' and teachers' priority ranking of objectives, and the categories of implementers. These cross-tabulations are provided in Appendix II (Tables 8f to 8g) The chi-square values are tabulated on the next page, and will be analysed mostly in the light of the previous findings, namely

(i) that pupils' ranking will be made on the basis of their perception of what was actually taking place in the classroom and therefore their acceptance of objectives will be equivalent to their perceived teacher ranking

(ii) that pupils' priorities will not equate with teachers' priorities.

In the first place, however, it might be worthwhile to examine briefly the responses of the pupils of the three categories of implementers. Regarding pupils' priorities, an examination of the cross-tabulations' cells (Table 8e(i) to 8e(ii) in Appendix II) reveals that the incidence of responses among all three groups is very alike insofar as objectives C, D and G are concerned. On the other hand, there are stronger tendencies in the high implementers' group than in the other groups to give a top ranking to objectives B, E and F and a low ranking to objective H. Similarly, there is a stronger association between the medium implementers' group and objective A (in terms of top ranking) and objective I (in terms of bottom ranking).

Table C15: Pupils'/Teachers' Ranking of Objectives X Levels of Implementers

Items	Objectives	χ^2 Value and Inference		
		Pupils' Priorities	*Perceived Teacher Ranking*	*Teachers' Priorities*
A	Learning facts about man and society.	$\chi^2 = 50.04$ $d.f = 16$ ***	$\chi^2 = 30.23$ $d.f = 16$ *	$\chi^2 = 675.99$ $d.f = 14$ ***
B	Developing facts and concepts.	$\chi^2 = 43.66$ $d.f = 16$ ***	$\chi^2 = 27.04$ $d.f = 16$ *	$\chi^2 = 543.38$ $d.f = 16$ ***
C	Ability to look for various sources of information.	$\chi^2 = 22.48$ $d.f = 16$ n.s.	$\chi^2 = 23.36$ $d.f = 18$ n.s.	$\chi^2 = 516.82$ $d.f = 16$ ***
D	Ability to interpret graphics.	$\chi^2 = 19.66$ $d.f = 18$ n.s.	$\chi^2 = 19.07$ $d.f = 18$ n.s.	$\chi^2 = 667.59$ $d.f = 16$ ***
E	Ability to work and participate with others.	$\chi^2 = 29.77$ $d.f = 16$ *	$\chi^2 = 17.86$ $d.f = 16$ n.s.	$\chi^2 = 401.78$ $d.f = 16$ ***
F	Developing tolerance for different cultures and societies	$\chi^2 = 29.47$ $d.f = 16$ *	$\chi^2 = 17.13$ $d.f = 16$ n.s.	$\chi^2 = 381.625$ $d.f = 16$ ***

Items	*Objectives*	χ^2 *Value and Inference*		
		Pupils' Priorities	*Perceived Teacher Ranking*	*Teachers' Priorities*
G	Ability to accept others' views and to evaluate information.	$\chi^2 = 16.75$ $d.f = 18$ n.s.	$\chi^2 = 35.62$ $d.f = 18$ **	$\chi^2 = 660.77$ $d.f = 16$ ***
H	Ability to think about one's own attitudes/values.	$\chi^2 = 44.19$ $d.f = 18$ ***	$\chi^2 = 19.26$ $d.f = 18$ n.s.	$\chi^2 = 946.45$ $d.f = 16$ ***
I	Accepting responsibility in a changing society.	$\chi^2 = 74.01$ $d.f = 16$ ***	$\chi^2 = 53.06$ $d.f = 18$ ***	$\chi^2 = 1132.27$ $d.f = 14$ ***

However, apart from these stronger tendencies in certain groups, the trend of ranking is almost the same among all three groups. This would seem to confirm previous findings on this point.

The priorities of these three groups of pupils bear a strong relationship with their perceived teacher ranking; the same strong associations between these three groups of implementers and their ranking of certain objectives are found. The same trend of ranking among all three groups is also found (Tables 8f1 to 8f9 in Appendix II). On the other hand, the teachers' priorities at the three levels of implementation (Tables 8f1 to 8f9 in Appendix II) , do not tally with the pupils' priorities and the perceived teacher ranking. Evidence favourable to this finding is also available from Table C12. This would then support previous findings suggesting that pupils' priorities of objectives depend on their perceived teacher implementation of these objectives in the classroom, but that pupils' priorities are not equivalent to teachers' priorities.

Furthermore, in Chapter III, it was found that there was a consensus of opinions among all sub-groups of teachers in relation to their priorities of objective except in the case of objective A (the recall of facts) which was stressed by the unqualified teachers. One reason for this, it was suggested, resides in the fact that such teachers were not aware of the de-emphasis on this objective. In the present chapter, the priorities of teachers at three levels of implementation have been investigated, and the previous conclusions do seem to be confirmed. Low implementers who include a high proportion of unqualified teachers, attach much importance to the recall of facts, while the high implementers stress the development of concepts, skills and attitudes objectives. The previous conclusions, then,

regarding teachers' and pupils' priorities of objectives remain substantially unaltered.

Pupils' Understanding of Objectives and Their Perceptions of Social Studies as a School Subject

These perceptions were measured by a projective technique, namely an open-ended story-telling technique. The story depicted four situations faced by a Form III pupil; after reading each situation, the respondents had to complete the open-ended statements provided in the questionnaire.

The replies made by the total sample of the respondents (N = 1 907) were first analysed with a view to categorizing all the statements related to each situation into appropriate units. Since projective techniques have a reasonable element of subjectivity of interpretation, these categorized data were presented to six independent judges for their views on the categorization. The same judges used for validating the classification of the teachers' open-ended data were used here.

The testing of the validity of the researcher's categories for classifying open-ended responses was carried out by a binomial test which was chosen because the data were in two discrete categories (agreement or disagreement with the number of statements classified). The same formula (devised by Dr Mc Lean of Liverpool School of Education) that was used for testing the validity of the categories drawn up for classifying teachers' open-ended responses, was also used here. The test is briefly as follows:

Let r = number of statements on whose classification all judges agree

N = number of statements being classified.

For a null hypothesis, it was supposed that statements were randomly assigned to categories. r was compared with $\frac{1}{2}N$. If r is greater than or is equal to $\frac{1}{2}N$, the null hypothesis can be rejected. The mathematical justification of this test is presented in Appendix I.

Table C16 shows the data in the form appropriate for applying the test.

Table C16: Classification of Statements of Open-ended Question 3

Sub-Items	*N*	*r*
A	1 838	1 466
B	1 569	1 569
C	1 788	1 673
D	1 730	1 679

Inspection of these data quickly reveals that in each case, r is much greater than $\frac{1}{2}N$, and therefore in each case the null hypothesis that statements were randomly assigned to categories, can be rejected. It can be concluded that the categories used for classifying the open-ended responses are valid, and that objectivity has been achieved in the process of classification.

The categories obtained for each sub-item were as follows:

Table C17: Categorisation of Items

	% Response Rate
Sub-item A = Interpreting the meaning of active participation in Social Studies lessons	
Category 1: Participation can take various forms for example, discussion work, collecting extra information, answering questions.	38

		% Response Rate
Category 2:	Participation implies certain behaviour on the part of pupils for example, attention, seriousness.	42
Category 3:	Participation is important to avoid boring lessons.	15
Category 4:	Participation depends on the teacher's encouragement or role in the classroom.	2
	Neutral	3

Sub-item 2 = Helping the teacher to collect supplementary information

Category 1:	Information can be derived from various sources, for example, libraries, newspapers, graphics, television and radio, interviews, visits.	82
Category 2:	Irrelevant replies for example, being attentive.	3
	Neutral	17

Sub-item C = Thinking about ways of passing examination in Social Studies other than by memorizing the textbook content

Category 1:	Regular or constant revision of facts previously learned.	40
Category 2:	Understanding and reasoning are more important elements in the learning process than memorization.	25
Category 3:	Self-discipline, for example, pupil should condition himself to work seriously.	17

		% Response Rate
Category 4:	Self-enrichment, for example, the need to derive ideas from other sources.	12
	Neutral	6
Sub-item D:	*Feelings about the discontinuation of Social Studies at the end of a 3 years' course*	
Category 1:	Expression of bitter disappointment, annoyance and anger by these who like the subject for various reasons.	65
Category 2:	There are those who are resigned to choosing subjects closely related to Social Studies.	13
Category 3:	Certificate-conscious pupils would opt for subjects in which they can pass.	8
Category 4:	Job-conscious pupils would choose subjects which lead to a career or a job.	1.6
Category 5:	Discontinuation is a good thing to those who think Social Studies made too great demands on them in terms of thinking and learning.	2.6
Category 6:	Discontinuation appeals to those who find Social Studies a boring subject.	.8
	Neutral	9

One of the purposes of using this projective technique was to gain some understanding of the way pupils perceived some of the objectives that they had ranked previously. The first sub-item relates to the ability to participate actively in the classroom.

From the pupils' responses, it is obvious that only one-third of them seemed to have understood the meaning of active participation. A minority of this group had even stated that the attainment of this objective depended on the establishment of good teacher-pupil relationships. To the other respondents, classroom participation meant working seriously or showing attention to the teacher. It is clear, then, that many pupils did not understand how that objective was to be developed, and it is not surprising that the latter was ranked half-way down the pupils' list of priorities.

Responses to the second sub-item illustrate that the majority of the pupils had understood what it meant to look for information through various sources. The implication is that the behaviour adopted by many teachers seemed favourable to the attainment of this objective.

The third sub-item invited pupils to think about ways of passing examination. While a quarter of the respondents stressed the importance of developing and understanding ideas, 40 per cent of the sample attached great importance to the content revision of facts or memorization, thereby confirming the top place allotted to the ability of learning facts in their list of priorities.

The second purpose of this projective technique was to measure the pupils' perception of Social Studies as a school subject. Responses to the fourth sub-item made it obvious that pupils showed much concern about the discontinuation of the Social Studies Project beyond Form III. In the previous chapter, it was found that the teachers too entertained a feeling of disappointment and frustration on this issue. 65 per cent of the pupils had come to be deeply involved in this

subject which appealed to them for a variety of reasons for example, *"the subject is lively and interesting", "the Social Studies class is the only class where ideas and opinions can be shared", "the subject develops thinking", "it provides general knowledge" etc.* Interestingly enough another major cause for concern about the discontinuation of Social Studies among the same category of pupils, relates to *"the three years of hard work and interest put in this subject for nothing", "it seems clear now that learning Social Studies seems to have been a waste of time".* Underlying such statement is the pupils' intense preoccupation with examinations. Indeed this preoccupation with examination has blinded these pupils to the fact that, however interesting and appealing Social Studies lessons are, they are not examination relevant. There is little point in learning about an interesting subject that is not required for the Form V examination. The latter were mostly concerned with the traditional subjects of Geography, History, Economics and Sociology. The fact that Social Studies provides adequate preparation for these subjects, at upper levels, does not seem to have made much impact on the pupils. On these grounds, therefore, the subject should have been allowed to continue in upper forms. The other categories of responses on this fourth sub-item did not express concern about the discontinuity of Social Studies beyond Form III. What mattered most to them was the existence of other subjects related or not related to Social Studies which could help them to obtain a certificate or a job. It is clear, therefore, that pupils like their teachers, showed much concern about the importance to get certificates. The idea that the certificate alone is important, had had a great impact on pupils' thinking.

In this chapter, Questions 6 and 11 (outlined in Chapter I) have been tackled, and hypotheses 1 to 4 have been tested. Briefly the results may be summed up as follows:

Hypothesis 1: that teachers' priorities of objectives would differ from those of the pupils and that pupils' priorities would be equivalent to perceived teacher ranking.

This was clearly confirmed. A comparison of pupils perceptions of the importance of teaching objectives with perceived teacher ranking and actual teacher ranking (Question 2) brought certain conclusions which are in keeping with some of the previous findings. There was unanimity between the pupils' ranking and their perceptions of the teachers' ranking, but discrepancies occurred between these two rankings and the teachers' list of objectives' priorities.

The ranking of objectives by pupils belonging to the three categories of implementers also re-affirms the complete identification between pupils' priorities and their perceived teacher ranking, as well as the striking differences of opinions between these two rankings and teacher priorities.

This seems to indicate that the teachers' views on the importance of objectives and their awareness of the Project's ideas on teaching objectives did not necessarily condition their classroom implementation of the new materials. There appeared to be a gap between the teachers' expressed views on objectives and their implementation of these objectives in the classroom. The result was that pupils' acceptance of the importance of certain teaching

objectives reflected to a certain extent their perceptions of the teachers' actual behaviour in the classroom. Teachers did not seem to be aware of the impact that their classroom behaviour was having on their pupils' perceptions. Pupils were identifying themselves with their perceived teacher ranking, and this explains the strong agreement between their ranking and their perception of the teachers' ranking. Contrary to teachers' priorities, the knowledge of facts which was stressed in the classroom was given top priority in the lists of pupils' ranking and perceived teacher ranking. On the other hand, the objectives relating to values and attitudes were placed well down in those lists. Obviously, pupils attached little importance to the affective objectives.

It would seem that teachers were not explaining effectively enough to their pupils what they were doing, or else they were not inventing more effective methods of achieving these objectives. If teachers were to put more effort into achieving the affective objective, they would, probably first have to convince both themselves and their pupils that these objectives were important.

However it is perfectly clear that teachers could hardly convince themselves that these objectives were of the utmost importance if they themselves doubted their feasibility of achievement. This finding is particularly interesting since it was found in the conclusions drawn from teachers' data that teachers did show concern about these objectives, but in view of the prevailing climate of preoccupation with examinations, they were also concerned with the idea that pupils must get their certificates. The teachers' doubt about the possibility of achieving these objectives, had certainly an impact on pupils' thinking. Another possible explanation of the

discrepancy between pupils' and teachers' ranking of these objectives is that teachers did not really understand how these objectives were to be developed in the classroom. There is also the possibility that the teachers were stating the objectives they thought they ought to state, but in fact, were giving different emphasis in their actual teaching..

Hypothesis 2: That pupils could reveal a well-balanced picture of their teacher classroom strategy through proper identification of the positive and negative pairs of statements which describe various aspects of classroom implementation strategies.

This was not entirely confirmed. The results of pupils' perceptions of their teachers' classroom implementation strategy (Question 1) appear somewhat *"suspect"*. The *"theoretical"* expectation of item intercorrelations did not work out as easily or as unambiguously as was expected. There could have been certain practical weaknesses in the data that stood in the way of clear-cut findings; either the positive and negative pairs of sub-items were not sufficiently clear for adequate discrimination or the pupils' ability and level of understanding did not allow them to interpret these data unequivocally.

On the other hand, it is worthwhile pointing out, here, that the evidence is in favour of the acceptance of this hypothesis with regard to the perceptions of pupils of high implementers. The results of these pupils' perceptions were quite striking. However, in view of the problems mentioned earlier, one cannot say that this hypothesis was confirmed entirely or unambiguously.

Hypothesis 3: That pupils of qualified teachers will be able to perceive more clearly their teachers' implementation strategy than pupils of unqualified teachers.

This was partially confirmed. The pattern of responses among the different groups of pupils categorized in a three-way classification based on teacher qualifications (unqualified, Diploma holders, Degree holders) was similar.

This could be due to the possibility that there was, in fact little difference between the perceptions of the three groups. It could also be due to the ambiguous interpretation of the data as seen previously. In terms of more effective responses, however, it was noted that pupils belonging to the group of Degree holders performed relatively better on Question 1.

Hypothesis 4: that pupils of high implementers will be superior to pupils of the other groups of implementers in their perception of the teacher implementation strategy.

This was partially confirmed. There was a significant tendency for pupils of medium implementers to be slightly superior to those of high implementers in their perception of the teacher classroom strategy. Both medium and high implementers' groups of pupils performed better in their demarcation of the positive and negative items of Question 1 than pupils belonging to the low implementers.

Summing up, then, the pupils' perceptions of the classroom implementation strategy revealed that with the possible exception of the medium and high implementers, the teachers were not involved in a style of teaching different from their traditional role. Even

teachers who were trained to handle the new curriculum were not displaying many of the positive aspects of the Project's implementation strategy. The only positive aspect which was shared by all three groups of teacher qualifications, was pupils' involvement in the preparation of classroom visuals.

The conclusion is that either teachers did not sufficiently know how they were supposed to operate, or other factors were inhibiting the proper implementation of the Project; for instance, the predominance of examination consciousness, and the general expectation of an authoritative collection of knowledge for examinations. Thus teachers relied mostly on the textbook as the source of knowledge and the dominant instructional tool. It is the only *"rock"* they have to cling to, as Beeby (1962)[1] would say. The textbook orientation was reinforced through homework assignments based on the answering of end-of-chapter questions. This view of the textbook was one factor that stood in the way of teachers involving pupils in thought-provoking questions, in surveys or visits outside the schools, in discussion of issues relating to man and society and in finding out supplementary information.

The undue stress on the transmission of factual information persisted in spite of the fact that the evaluation tests carried out in schools by the Project team stressed skill objectives rather than knowledge. Indeed, a few pupils were quick to point out in their replies to open-ended items that they considered the ability to find supplementary sources of information important because the test papers they had faced so far never used only the textbook knowledge.

Hypothesis 5: that class sex composition would not show any impact on the pupils' perceptions of their teacher implementation strategy.

Pupils' perceptions of their teachers' implementation strategy did not vary with such personal or school characteristics as class sex composition. The conclusions drawn from the previous analysis of the teacher data and classroom observation have confirmed that, with the exception of teacher qualifications, the most striking thing about the data dealing with school or personal characteristics is their general lack of significance. In a sense this is a good thing since no subsequent analyses for different variables have to be done separately.

Hypothesis 6: that pupils will show a positive attitude to the new Social Studies curriculum and that they will strongly oppose the discontinuation of the subject of Form III level.

This hypothesis was confirmed. The pupils were on the whole positive about the new curriculum. These findings are in keeping with the conclusions drawn from the teachers' data. The majority of the pupils expressed much disappointment with the discontinuation of the subject; they observed that the subject did much to widen their horizons and to develop powers of critical thought. But although Social Studies was very interesting, it was not necessarily useful. Some saw little point in learning about an interesting subject that was not required in higher forms for examinations purposes. Unless, therefore, the subject is allowed to continue in upper forms, pupils might lose motivation in studying it.

Like their teachers, the pupils attached much importance to the Form V examination. The certificate matters most to the pupils, more so than the content of Social Studies or its relevance to their

lives; the certificate is the key to the door of high education and a better job. The data thus provide a good example of what Raven (1977)[2] has termed *"anticipatory socialization"*.

The intense preoccupation with examinations was also reflected in the views of a minority of pupils who stated that Social Studies was not a suitable career line-course, and that it was in fact a down playing of what was normally accepted to be *"career-oriented"* subjects (for example, Economics).

One thing emerges clearly from this data; pupils have acquired distinctive images of career-oriented subjects which are quite inaccurate. Teachers could try to alter these images if they set about it systematically by pinpointing on the relevance of subjects to their lives. Whether they should do so in the prevailing circumstances is another question.

Summing up, then, of the six hypotheses that were tested here, only hypothesis 2 seemed to be somewhat inconsistent with the data, while there was empirical support, in varying degrees, for the other four hypotheses. In the case of hypotheses 1, 5 and 6 the prediction emerges as strongly as was expected. Regarding hypothesis 2 there could have been certain weaknesses in the data that did not quite lead to clear-cut findings, and that also affected to a certain extent the findings on hypothesis 3. Hypothesis 4 was partially confirmed. In spite of the limitations of some of these data on pupil perspectives, then the overall impression from this analysis is that it has provided additional confirmation for the findings reported in Chapters III and IV respectively. These findings amount basically to one conclusion: there was a gap between the teachers'

expressed views on the Project's objectives and its philosophy and their implementation of these objectives and philosophy in the classroom. It remains now to establish whether there is any link between the teachers' implementation strategy and the pupils' achievement of these objectives. This question will be considered in the next chapter.

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RESULTS IV: PUPILS'ACHIEVEMENT IN THE NEW CURRICULUM

This chapter deals with the assessment of pupils' achievement during three years of studying the Social Studies programme. Broadly, the following question outlined in Chapter I will be considered:

Question II: What was the achievement of the pupils in the main areas of the Project's objectives?

Various factors are known to influence a pupil's performance in items assigned to specific areas of objectives other than his or her level of ability. One such determinant that is clearly recognised is the classroom process. In chapter IV, it was pointed out that various researchers (for example, Galton, Simon and Croll, (1980)) have adduced that the teaching behaviour has an effect on the pupil's performance. This in itself throws doubt on the validity of attempting to attribute pupils' success uniquely to the ability dimension.

The particular determinant pursued in the present investigation is the teacher's strategy in implementing the new programme's objectives. The nature of the influence of the teacher's implementation strategy on the performance of the pupils may be elusive; but it is being postulated that pupils of high implementers will, in general, achieve higher scores across the main areas of objectives than pupils of medium implementers, and pupils of medium implementers will perform better in these areas than pupils of low implementers.

It may be recalled, here, that in Chapter IV, the classroom behaviour of teachers was analysed; three categories of implementers were then identified. In Chapter V, the relationship between these categories of implementers and the pupils' perception of their teacher implementation strategy and ranking of objectives was examined. In this chapter, the analysis is taken a stage furter; the relationship between the implementation levels and the pupils' achievement in the main areas of objectives will be examined. From the description of the characteristics of the three categories of implementers in Chapter IV there are reasons to anticipate that differences will be found in the performance of their pupils.

The use of the standardized test

Since this study was concerned with the effects of the Project on the pupils' progress, it was clearly important to measure the objectives which the new curriculum was trying to achieve. Indeed, it can be argued that the standardized test has much to offer in the measurement of curriculum implementation. The design of the study is sufficiently strong to establish the link between the standardized test and the other measures of implementation used in this study. First of all, the samples of classes and teachers are identical, and secondly, the same areas of interest or topics (namely, the objectives of the Project) have been covered in these measures. In both the Teacher's and Pupil's Questionnaires, a list of the Project's main objectives was given to the respondents who were asked to rank these objectives in order of their relative importance to them. One of the classroom observation schedules that were used, namely the Evans/ Behrman Schedule, considered the implementation of these objectives in the classroom by the teacher. To the extent that the standardized

test was made to measure these main objectives of the new programme, it can be expected to give an approximate picture of pupil achievement.

It may be of interest to point out here that Rutter et al (1979)[1] have argued that public examination results are the most suitable means of measuring school products, since these relate directly to the content of the school curriculum.

Finally, it may also be relevant to point out here that the standardized test was given at the end of the Pupils' third year with the new curriculum and so a description of the pupils' performance at that particular time is being attempted here. No estimate could be obtained of the extent to which the pupils' initial achievement on entering Form III may have influenced their performance under the level of implementation to which they were exposed. However, since all the pupils were being exposed to an innovative programme at the levels of Forms I, II and III respectively, it is assumed that initial achievement on entering Form III may not be a determinant factor in this respect.

Study Population

The population described in Table D1 represents a random-sample of the island-wide Form III classes which participated in the Questionnaire surveys (both Teachers' and Pupils') and classroom observation exercises. It represents the three categories of implementers in terms of school types, number of teachers, classes and pupils. The high percentage of Private Schools teachers is due to a higher percentage of these in the island. It was difficult to match the number for teachers and pupils maximally because certain

selected schools which had initially agreed to participate in the test, could not do so eventually. Furthermore, a few classes did not fill in correctly the summary mark sheets designed by the researcher and therefore the performance of their pupils had to be discarded.

Table D1: Study Population for the Standardized Test

Implementers	*Schools*			*Teachers*	*Classes*	*Pupils*
	State	*Junior Secondary*	*Private*			
Low	0	0	11	11	11	411
Medium	1	1	17	19	19	737
High	2	5	7	14	14	526
Total	3	6	35	44	44	1 674

Test Construction

In a study which is concerned with the achievement of the Project's main areas of objectives by pupils, the nature of the test items is obviously very important. Tests measuring the recall of facts are the main concern of all schools, teachers and pupils, and therefore all the thirty-one items of the test covered aspects of factual recall. However, in addition to factual recall, it was also decided to measure as far as was practicable, the other objectives outlined in both the Teachers' Guides and Pupils' materials.

The objectives of the programme are broadly as follows: (i) Knowledge (ii) Skills (iii) Attitudes and values. These are further broken down as follows:

(i) Knowledge: Facts, concepts, generalisations.

(ii) Skills: Graphics/Cartoon interpretation, critical thinking, social skills.

(iii) Attitudes and values: Empathy, awareness, interest and acceptance of responsibility.

It would be unwise, of course, to expect the objectives of the new curriculum to be faithfully mirrored in the test paper, but generally speaking, the weighting of the objectives in the test paper was made to reflect the weighting in the curriculum materials. More stress was given to content and skills objectives, and less to objectives in the affective domain.

A specification grid was used as a basis for item construction. A copy of the grid is given in Appendix III (5a). For convenience, the different types of objectives are presented in separate columns on the checklist. However in the reality of classroom teaching, these objectives are interdependent and often pursued together. It is a commonly-accepted fact that the cognitive and affective objectives overlap each other, the intermingling of intellectual and attitudinal elements being unavoidable. For example, the ability to develop critical thinking relates to a willingness to accept responsibility for one's thoughts. Therefore on the specification grid, the items are associated with more than one objective.

The assignment of items to objectives on the specification grid was done by the Project team who represented also the Examination Board set up for running this test in schools. Intersubjective agreement on the assignment of test items to objectives could thus be claimed.

Table D2 on the next page illustrates the list of the Project's objectives submitted to teachers and pupils for ranking in order of priorities, and their representation per item in the standardized test is also indicated .

Table D2: Objectives specified in the test

	Objectives	*Test Items*
1.	Learning facts about man and society.	Nos 1 to 31 - All items
2.	Developing ideas, concepts generalizations.	6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 19, 20, 21, 22, 24, 25.
3.	Ability to look for various sources of information.	Test does not allow for the direct measurement of this objective
4.	Ability to interpret graphics.	21, 22, 23, 24, 25, 28, 31
5.	Ability to work and participate with others.	Not measured
6.	Development of a favourable attitude to different races/cultures.	26
7.	Development of skill in critical thinking.	17, 21, 27, 30, 31.
8.	Development of an awareness of one's attitude towards social problems.	26, 27, 30.
9.	Willingness to respond and to participate in special tasks.	Not measured

Because of the impossibility of putting these objectives to the test on a one-by-one basis and also for the sake of convenience and clarity, this list can be justifiably sub-divided into four broad clusters of objectives as listed below:

1. Content objectives-Factual information (Objective No. 1)
2. Content objectives - Conceptual information (Objective No. 2)
3. Skills objectives (Objectives Nos. 3, 4, 5, 7).
4. Attitudes objectives (Objectives Nos. 6, 7, 8, 9) (at the levels of receiving/responding).

This classification by clusters of objectives is in line with most of the taxonomies available, notably that of Bloom et al (factual and conceptual). The division of the content objectives into two parts is in line with the Project's rationale.

The test items (No. 1 to 31) will be grouped according to one cluster or the other. By thus grouping the items, five part-scores of each candidate will be obtained. It is a fact, however, that the scores on factual information amount to the total test scores. Multiple-choice items constitute the major testing procedure in Section I of the test paper; the second section gives the pupils the opportunity to express themselves in structured items or more open-ended items.

Validity and Reliability of Test

This test developed and improved since 1978 was meant to be a third trial version of the national examinations scheduled to take place in 1982. In the light of the experience gained in the two previous years, the level of difficulty of the test was known; this is reflected in the analysis of the facility index of the objective question in Table D3.

The test consisted of items which dealt with topics of the new curriculum familiar to the candidates, hence content validity was ensured. It was explained, earlier, that these items were prepared on the basis of a specification grid circulated to all the schools, and as such they were concerned with the objectives and the rationale of the new curriculum; in this respect, construct validity can be claimed. The test items were assigned to each objective by consensus of opinion of the Social Studies team as to their face validity.

It might be also relevant to add here that the team who constructed this test, were also responsible for the development of the curriculum materials, for teacher development and partly for monitoring the classroom use of the materials. All this could be taken as positive indication of the validity of the test.

The questions being of the objectives and structured types, reliability of marking was obvious. Reliability was also achieved with the aid of a highly-detailed marking scheme to be followed by each marker. This scheme was agreed upon in advance by the members of the examination Board. The clear marking scheme could have left little room for unreliability of marking by the classroom teacher. A wide range of possible answers was given in respect of the structured questions.

Overall Performance

One of the fundamental characteristics of the overall performance of the pupils in that standardized test was its pronounced heterogeneity. This view can be summarized thus:

Maximum Marks	*Mean Marks*	*Standard Deviation*
100	48	15.1

The variability of the pupils' performance will be looked into more closely later in conjunction with the teacher's level of implementation.

Item Analysis

Only the objective items of the test paper were analysed with regard to their facility index and discrimination index. The facility index of an item is that proportion of the pupils who have answered correctly to the item. An estimate of the discriminating power of a given question can be obtained by substracting the number of pupils in the *"lower"* 27 per cent of the whole population (who attempted the question correctly) from the number of pupils in the *"upper"* 27 per cent of the population; this figure is then divided by one-half of the total number of pupils who took part in the test. Table D3 below gives the value for the facility and discrimination indices in respect of Questions 1 to 20 in the test paper.

Table D3: Facility and Discrimination Indices

Questions	*Facility Index* %	*Discrimination Index*
1	53.7	0.33
2	45.9	0.21
3	54.4	0.20
4	54.3	0.24
5	56.9	0.26
6	37.3	0.27
7	66.5	0.09
8	35.4	0.11
9	54.7	0.13
10	27.2	0.12
11	43.4	0.24
12	67.2	0.23
13	47.9	0.29
14	39.4	0.22
15	60.1	0.26
16	52.9	0.33

Questions	*Facility Index*	*Discrimination Index*
17	51.9	0.20
18	41.5	0.19
19	30.3	0.16
20	44.4	0.02

Fourteen of the items have a facility index of 43 to 50, and could be considered as *"reasonably"* good items. None of the items could be considered as very easy; there were a few hard items, notably items 10 and 19.

As regards discrimination index, the D.I values are quite appropriate for the wide range of pupils' performance. Items with D.I values from .30 to .20 can be considered as reasonably good for test purposes in this particular respect. There was no negative discrimination index, although two items had values below .10 (items 7 and 20). The low discrimination effectiveness of those two items which proved to be well beyond the reach of the weak pupils, can be accounted for by the fact that they both dealt with the conceptualisation of terms. (See Test Paper in Appendix III). Classroom observation has shown that some teachers or categories of implementers did not take into account the conceptualisation process and stressed particularly the acquisition of facts.

Performance in Section II

This part of the test contains structured questions or questions of the open-ended type. Table D4 gives a breakdown of the results obtained in the mark intervals as specified.

Table D4: Performance in Structured Questions

Question No.	*Mark Intervals*	*Response Percentages*
27	0 - 4	71
	5 - 8	29
28	0 - 4	82
	5 - 8	18
29	0 - 4	84
	5 - 8	16
30	0 - 4	70
	5 - 8	30
31	0 - 4	94
	5 - 8	6

The table shows unsatisfactory achievement in this part of the test paper, most respondents scoring between 0 to 4 marks (out of a total of 8). It reveals that questions of this nature appeared difficult to the pupils. This does not necessarily point to the fact that the level of sophistication of the paper could have been unreasonable, but rather to improper ways of implementing the new curriculum. Indeed, in the light of the previous findings concerning the stress on the accumulation and recall of facts, these results are not surprising. Teachers on the whole were busily engaged in covering the subject-matter of the new curriculum, not in developing skills in their pupils.

Analysis and Results

The data obtained in this study will be analysed in terms of a comparison of the class means established at the three levels of implementation in each of the four areas of objectives. Using class averages as the basis units of analyses can be justified on the ground that class-based instruction rather than an individualized

approach characterizes the modified-enquiry strategies of the new curriculum. It is recognised, however, that such an approach does not allow the investigation of relationships between types of pupils within the same class and achievement. On the other hand, it can be argued that differences between pupils which are not explained by level of implementation, do not occur when class mean is the unit of analysis.

Table D5 summarises the mean scores of the pupils of each category of implementers on each of the clusters of objectives. The detailed results of class means in each category are given in Appendix II {9(a) to 9(d)}

Table D5: Percentage Means of Scores

Clusters of Objectives	*Low Implementers (N = 11)*	*Medium Implementers (N = 19)*	*High Implementers (N = 14)*
1. Factual information	41.6	45.3	59.0
2. Conceptual information	47.63	50.65	66.38
3. Skills	35.00	37.76	53.23
4. Attitudes	48.32	51.18	66.16

When the percentage means obtained on factual information between the high implementers' pupils and those of the low and medium groups are compared, the former are superior to the latter. Looking now at the means for concepts, skills and attitudes, a similar phenomenon is evident. It is obvious that these percentage means generally favour the group of high implementers, as they would be expected to do. Pupils of low and medium implementers show an almost identical level of performance. The trend in favour of the high

implementers thus seemed to operate right across all four areas of objectives. It remains to test the statistical significance of these differences and to see whether they may be allocated to the factor considered in the hypothesis, namely the level of implementation.

Analysis of variance tests were computed between the high, medium and low levels of implementers' groups in achievement in each of the four clusters of objectives. Multiple regression procedures were also used to examine the relationships between levels of implementation and achievement in each area of objectives. A total of four analysis of variance tests, four multiple classification analyses and four contrast coefficient analyses were thus computed, three tests being related to each area of objectives. These analyses were run on the computer using the SPSS programmes. Further details of these analyses are provided in Appendix II (Table 9e).

Achievement in the first cluster of objectives

Table D6 provides the one-way analysis of variance results in the first area of objectives (Recall of facts)

Table D6: Analysis of Variance: Levels of implementation X Cluster 1 Objectives

Source of Variation	*Sum of Squares*	*DF*	*Mean Squares*	*F Ratio*	*F Probability*
Between groups	80 534.4848	2	40 267.2424	243.2322	.0000
Within groups	267 198.6618	1 614	165.5506		
Total	347 733.1466	1 616	215.181		

Differences in achievement in the first cluster of objectives were thus found to be statistically significant between the three levels of implementation groups. Since, as explained earlier, achievement in the first cluster of objectives also amounts to total

achievement in the standardized test, it can be concluded that the level of implementation of the teacher has an effect upon pupil achievement. Pupils belonging to the group of high implementers performed better in this area of objectives and in the whole test than pupils of the other groups of implementers.

Table D7 gives the results of the Multiple Classification Analysis related to achievement in this first cluster of objectives. To help with the interpretation, a brief outline of the MCA is given here. This method of analysis is an option of the SPSS sub-programme ANOVA. The following outline is based on the article presented by On Kim and Kohout (1975)[2] in the SPSS material: the unadjusted deviation is simply the mean of each category expressed as a deviation from the grand mean. The *"eta"* for each factor indicates the proportion of variation in scores of each group explained by the level of implementation. In calculating the unadjusted mean values, no adjustment is made for other factors. The numbers in the second column indicate the adjusted mean values for each category when the other factor is adjusted for. Associated with the adjusted category effect is a partial correlation ratio known as *"beta"*. The *"beta"* value can be viewed as a partial regression coefficient in a very special sense. Because of the orthogonality, the same values are obtained for both columns. In addition to the above output, a multiple correlation R and R^2 also appear at the bottom of the MCA table.

Table D7: Multiple Classification Analysis: Levels of Implementation Cluster 1 Objectives

Grand Mean = 48.68

Level of Implementation	*N*	*Unadjusted*		*Adjusted for Independents*	
		Dev'n	*Eta*	*Dev'n*	*Beta*
1. Low	380	- 7.07		- 7.07	
2. Medium	739	- 3.34		- 3.34	
3. High	498	10.35		10.35	
			.48		.48
Multiple R^2					.232
Multiple *R*					.481

From the MCA table it may be noted that

1. the high implementation level is the most effective, while the low group is the least effective.

2. the eta = .48 is equivalent to a regression multiple R since there is only one factor (implementation level)

3. the Multiple R being equivalent to .48, it is valid to conclude that there was a relationship between level of implementation and achievement.

4. an R^2 value of .23 indicates that 23 per cent of the variance in pupils' achievement was associated with the level of implementation.

The SPSS sub-programme one-way Analysis of variance also provides optional tests for a priori contrasts. Contrast coefficients specify contrasts between means of particular or combined groups and are chosen in such a way that they sum up to zero. Thus Contrast 1 in Table D8 = - 1.0 0.0 1.0 defines a contrast between the low

implementers and the combination of medium and high implementers' groups.

The output for a priori Contrast tests includes the t statistic and the two-tailed probability of t. A *"pooled"* and a *"separate"* variance estimate for t are provided as well. The separate variance estimate is used in the denominator of t when there is reason to believe that the homogeneity of variances assumption has been violated. The results of these tests for achievement in the first cluster of objectives are given in Table D8.

Table D8: Contrast Coefficient Matrix - Cluster 1 Objectives

	Low	*Medium*	*High*
	I M P L E M E N T E R S		
Contrast 1	- 1.0	0.0	1.0
Contrast 2	- .5	- .5	1.0

POOLED VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	17.4167	.8764	19.873	1 614.0	.000
Contrast 2	15.5500	.7052	22.050	1 614.0	.000

SEPARATE VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	17.4167	.8061	21.600	754.0	.000
Contrast 2	15.5500	.6406	24.283	1 127.0	.000

From the Contrast Coefficient Matrix above, it is obvious that there are contrasts between means of low implementers and of combined medium and high groups. The second contrast specifies a contrast between the combined low and medium groups and high implementers.

Achievement in the Second Cluster of Objectives

The one-way analysis of variance results in the second area of objectives (concepts and generalizations) are given in Table D9.

Table D9: Analysis of Variance: Levels of Implementation X Cluster 2 Objectives

Source of Variation	*Sum of Squares*	*D.F.*	*Mean Squares*	*F. Ratio*	*F Probability*
Between groups	5 457.5710	2	2 728.7855	155.996	.001
Within groups	28 233.1232	1 614	17.4926		
Total	33 690.6942	1 616	20.848		

The F value being highly significant ($p < .001$), it can be assumed that achievement in the items testing concepts and generalizations is determined by the teacher's level of implementation. Examination of the mean scores of each group of implementers reveal that the pupils of high implementers are more capable of applying knowledge acquired per se in new situations. This would tend to reflect the ways concepts were taught and learned in this particular group of implementers.

The superiority of pupils belonging to the high implementers is also reflected in the following MCA table.

Table D10: Multiple Classification Analysis: Levels of Implementation X Cluster 2 Objectives

Grand Mean = 15.32

Level of Implementation	*N*	*Unadjusted*		*Adjusted for Independents*	
		Dev'n	*Eta*	*Dev'n*	*Beta*
1. Low	380	- 1.93		- 1.93	
2. Medium	739	- .81		- .81	
3. High	498	2.67		2.67	
			.40		.40
Multiple R^2					.162
Multiple R					.402

An R value of .40 indicates a relationship between pupils' achievement in this second area of objectives and levels of implementation.

Contrasts between the means of the various groups of implementers are evident in the table below:

Table D11: Contrast Coefficient Matrix - Cluster 2 Objectives

	Low	*Medium*	*High*
	I M P L E M E N T E R S		
Contrast 1	- 1.0	0.0	1.0
Contrast 2	- .5	-.5	1.0

POOLED VARIANCE ESTIMATE

	Value	*S.Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	4.6006	.2849	16.149	1 614.0	.000
Contrast 2	4.0429	.2292	17.636	1 614.0	.000

SEPARATE VARIANCE ESTIMATE

	Value	*S.Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	4.6006	.2691	17.098	739.4	.000
Contrast 2	4.0429	.2105	19.211	1 120.6	.000

Achievement in the Third Cluster of Objectives

The one-way analysis of variance results for the third cluster of objectives (skills) are provided in Table D12. Inspection of the table shows that once again level of implementation has a statistically significant effect.

Table D12: Analysis of Variance: Levels of Implementation X Cluster 3 Objectives

Source of Variation	*Sum of Squares*	*DF*	*Mean Squares*	*F Ratio*	*F Probability*
Between groups	10 130.9114	2	5 065.4557	227.1491	.000
Within groups	35 992.4229	1 614	22.3001		
Total	46 123.3343	1 616	28.542		

The effectiveness of the high implementers in achievement in this third area of objectives is equally reflected in the MCA Table D13.

Table D13: Multiple Classification Analysis: Levels of Implementation X Cluster 3 Objectives

Grand Mean = 14.96

Level of Implementation	*N*	*Unadjusted*		*Adjusted for Independents*	
		Dev'n	*Eta*	*Dev'n*	*Beta*
1. Low	380	- 2.43		- 2.43	
2. Medium	739	- 1.23		- 1.23	
3. High	498	3.69		3.69	
			.47		.47
Multiple R^2					.220
Multiple R					.469

Contrasts between the means of the three groups of implementers' pupils scores in the third area of objective are also evident in Table D14 on the next page.

Table D14: Contrast Coefficient Matrix - Cluster 3 Objectives

	Low	Medium	High
	IMPLEMENTERS		
Contrast 1	- 1.0	0.0	1.0
Contrast 2	- .5	- .5	1.0

POOLED VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	6.1137	.3217	19.007	1 614.0	.000
Contrast 2	5.5168	.2588	21.314	1 614.0	.000

SEPARATE VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	6.1137	.3086	19.811	801.8	.000
Contrast 2	5.5168	.2488	22.175	1 016.1	.000

Achievement in the Fourth Cluster of Objectives

The one-way analysis of variance results for the fourth area of objectives (the lower levels of attitudes in Bloom's affective domain) are provided in Table D15. The F value is again highly significant, and this fits in with the results obtained for the other group analyses of variance.

Table D15: Analysis of Variance: Levels of Implementation X *Cluster 4 Objectives*

Source of Variation	*Sum of Squares*	*DF*	*Mean Squares*	*F Ratio*	*F Probability*
Between groups	15 869.0730	2	7 934.5365	157.4704	.001
Within groups	81 325.3943	1 614	50.3875		
Total	97 194.4672	1 616	60.145		

Table D16 gives the results of the fourth Multiple Classification Analysis. This analysis confirms the findings in the analysis of variance. It can be concluded that level of implementation is significantly correlated with achievement in the fourth cluster of objectives.

Table D16: Multiple Classification Analysis: Levels of Implementation X Cluster 4 Objectives

Level of Implementation	*N*	*Unadjusted* *Dev'n*	*Eta*	*Adjusted for Independents* *Dev'n*	*Beta*
1. Low	386	- 3.23		- 3.23	
2. Medium	739	- 1.42		- 1.42	
3. High	498				
			.40		.40
Multiple R^2					.163
Multiple R					.404

Finally, Table D17 illustrates contrasts between the means of the three groups of implementers.

Table D17: Contrast Coefficient Matrix - Cluster 4 Objectives

	Low	*Medium*	*High*
	I M P L E M E N T E R S		
Contrast 1	- 1.0	0.0	1.0
Contrast 2	- .5	- .5	1.0

POOLED VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	7.8061	.4835	16.145	1 614.0	.000
Contrast 2	6.8978	.3891	17.729	1 614.0	.000

SEPARATE VARIANCE ESTIMATE

	Value	*S. Error*	*T. Value*	*D.F.*	*T. Prob.*
Contrast 1	7.8061	.4611	16.929	682.6	.000
Contrast 2	6.8978	.3489	19.768	1 181.0	.000

From the results of this investigation on the effect of level of implementation on the achievement of pupils in a standardized test, the following conclusions can be made:

1. Levels of implementation have an effect upon achievement in all areas of objectives. All four group analyses of variance were highly significant, with F values significant at $P < .001$. Some confidence can therefore be placed on these findings.

2. In total achievement, too, the overall F was significant at $P < .001$. Pupils of the high implementers group achieved a greater amount than pupils of the medium implementers' group. The latter group tends to show a slightly greater amount of achievement than pupils of the low implementers' group. It can therefore be concluded that as the level of implementation of the new curriculum increases from low to high, its effect on pupils' achievement tends to register an increase as well.

3. The Multiple Classification Analyses confirm the strength of the relationship between level of implementation and performance in a standardized test, thus demonstrating that the implementation effect is not a mere statistical artefact.

4. The Contrast Coefficient Matrices reflect the contrasts between the mean scores of the high implementers' group and those of the other groups of implementers' groups.

Discussion and Conclusion

This chapter was concerned with the achievement of pupils of three groups of implementers in a standardized test. The results showed that the high implementers were the most successful in developing the Project's objectives.

Two questions can be asked following these results and they are as follows:

1. Can the performance in the various objectives and on the total be regarded as satisfactory?

2. Were the differences in pupil achievement due mainly to differences in levels of implementation?

Regarding the answer to the first question, assuming that the items belonging to each broad cluster of objectives are appropriate, and also assuming that the level of sophistification represented by the test items is reasonable for the Form III pupils, it can be stated that achievement of objectives is on the whole not satisfactory. The concept of achievement or mastery is, however, controversial in itself. It depends on the type of test and questions or items set in the test. Jungwirth (1978)[3] has regarded a mean achievement of 65 per cent on a test requiring acquisition of knowledge as well as a reasonable *"degree of functionality"* of acquired subject-matter, as a reasonable proof of mastery; but he pointed out that Bloom (1968) would very likely demand something close to 90 per cent.

Since the standardized test in the present study was one which required equally subject-matter and application of knowledge, the 65 per cent level can be accepted as the critical percentage or arbitrary cut-off point; on this assumption, a total mean score of less than 60 per cent would be considered inadequate.

A glance at the total mean score per class per school in Appendix II (Table 9(a-d)) shows that only 1 out of 11 classes of low implementers has obtained a score of 60 per cent in some of the areas of objectives .1 out 19 classes of the medium group has a total of over 60 per cent across all four clusters of objectives, while three other classes came quite close to 60 per cent in some of the high implementers. Twelve out of fourteen classes belonging to the high implementers had managed to score over 60 per cent in almost all the areas of objectives.

It could thus be concluded that three years of Social Studies must be regarded as not quite having reached the desired level of impact on the pupils. It should be noted that these results were obtained within the framework of a mock national examination where, motivation being maximal, the results must also be seen as optimum for this population.

With regard to the second question, the problem of answering such a question has been clearly presented by Galton and Simon (1980)[4]

> *"Causality cannot be inferred from the results of non-experimental research. This is because the observed relationship between two variables may come about not because one has a causal influence on the other but because they are both dependent for this effect on some third variable".*

According to these two researchers, the main issue is the uncertainty that all possible third variables have been inadequately considered.

No attempt has been made in this study to consider the importance of some third variables with regard to pupil achievement in the main areas of objectives. On the other hand, in the previous chapter, the influence of certain third variables on the level of

implementation was examined. Some of these variables relate to what Galton and Simon would refer to as *"problematic"* variables which comprise teachers' characteristics.

The only variable which seemed to discriminate between successful and unsuccessful implementation was teachers' qualification (academic and professional). There was a mildly significant association between the level of implementation and teachers' qualification (at the .05 per cent level). The relevance of teachers' qualifications and level of implementation emerges throughout the analysis of teachers' attitudes to the Project, teacher classroom strategy and of pupils' perceptions of their teachers' classroom strategy. Variables such as teacher sex, teaching experience, class sex composition, school types and school environment did not affect the level of implementation.

The data presented in this chapter therefore, confirmed fairly conclusively the hypothesis about the effects of high implementers upon the relative achievement of the pupils as opposed to the effects of medium and low implementers. It was obvious that some teachers were showing a higher degree of effectiveness than others.

The findings presented in this chapter also make sense of the data obtained from Teacher and Pupil Questionnaires and from systematic classroom observation. These data were interpreted to mean that (a) teachers stressed mainly the attitudes objectives and the factual content objective in their priority ranking

(b) their priorities were identical with their expectations of the feasibility of objective achievement, thereby

reflecting an attempt on their part to idealize their teaching objectives

(c) teachers' awareness and expectations of objectives did not play an important role in their classroom interaction as was interpreted by neutral observers and perceived by their pupils.

The results of the one-way analyses of variance and of the Multiple Classification Analyses revealed that the F values and R^2 values in Tables D9 and D10 and in D15 and 16, dealing with concepts and attitudes respectively are much lower than in the other tables. This would seem to support the finding of the classroom observation and to indicate that teachers' priority ranking and their expectations of the feasibility of objective achievement had no influence on pupil achievement in the main areas of objectives.

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RESULTS V: A COMPARISON OF INITIAL AND LATE IMPLEMENTATION

Up till now the data provided by Teacher and Pupil Questionnaires, Classroom Observation Schedules and a Standardized test have been studied. The general outcome has been that the intentions of the curriculum developers and actual classroom practices are not concordant, and that adaptation of the innovation to meet special local needs is not made in a sensible way.

This is not to say that results typical of successful implementation have not appeared. For example, a classification of teachers observed in the classroom has brought forth a group of high implementers whose pupils were experiencing learning situations reflecting guided inquiry strategies. Second, the perceptions of pupils have revealed the existence of a group of teachers whose implementation strategy was more or less in line with the Project's rationale and philosophy. Third, the achievement of pupils of high implementers in a standardized test was higher than pupils of medium and low implementers.

However, while some qualified and trained teachers appear to have the qualities of successful implementers expected of them, they were in many respects closer to the unqualified teachers than expected or desired. Moreover, there are certain results that are expected to emerge during the late implementation stage, that have not been observed at all. For instance, it was expected that teachers would understand better the Project's objectives at a late stage in the implementation process, and implement these objectives more efficiently. There is little evidence that this is so.

This would seem to suggest that there are still inhibiting influences in the way of the Project's implementation. There remains a strong possibility that some of these influences are those that have persisted since the Project's initiation, while there are new influences which have cropped up over time.

The possibility is examined in this chapter, where the patterns of influences on the implementation process over a period of six years will be considered. A previous study of the Project's initial implementation phase carried out by the researcher in 1976/77 (M.Ed Degree, 1977, Liverpool) had diagnosed certain inhibiting influences, and it would be worthwhile investigating whether these influences persist during the late stage of implementation. This subsidiary investigation is designed to answer the remaining questions (12-14) outlined in Chapter I.

Question 12: To what extent have the teachers' grasp of the Project's intentions, their attitudes and classroom practices improved over time?

Question 13: Do the inhibiting influences of the initial stage persist after five years of the Project?

Question 14: Do different patterns of influences affect initial and late implementation phases?

These questions may be put in the form of hypotheses and certain predictions may be made. Regarding the first question, it is hypothesized that given sufficient exposure to the Project, the teachers would perform better in the implementation of the new curriculum(i). Teachers who have had early contact and involvement with the Project since its introduction into schools, would increase their knowledge and skills and would feel more commitment to the Project in the light

of their experiences. Attitudes of teachers who have been fully trained in the use of the Project's materials would be expected to be more favourable than those of the newcomers or the untrained ones. It is also possible to expect that the novelty of the Project which triggered teachers' enthusiasm and positive attitudes during the initial stage, would wear off in time and teachers would start displaying a negative attitude to the Project.

Regarding both questions 13 and 14, various factors are known to influence implementation, among them teacher knowledge and attitudes. Assuming other factors to be constant, it could be predicted that teacher inadequate knowledge which was an inhibiting factor in the early years of implementation, would improve over time and that this inhibiting factor would not persist after four to six years of the Project. However, when other factors are taken into account, like teacher mobility, classroom conditions, availability of resources, these are quite complex and may led to alterations in the pattern of influences.

It is expected that influences which are beyond the teachers' control, would tend to persist throughout the implementation stage. It is also important to bear in mind that these are likely to be more complex that can be taken into account here. Moreover, the nature of the investigation being what it is, it will not be possible to consider all factors affecting implementation adequately to enable accurate prediction. However, it would seem fair to expect that, in general, certain inhibiting influences of the initial stage would persist after six years of the Project(2); and that patterns of influences affecting initial and late implementation phase would tend to be both similar and different(3).

The Previous Implementation Study

A previous study by the researcher in 1976/1977 (Liverpool, M.Ed degree) has described the outcome of the innovation Project at its initial implementation phase. It was then concluded that

1. The majority of teachers did not have adequate knowledge and skills to perform according to the new teaching styles.

2. Teachers were unclear about the objectives of teaching Social Studies and they hold a diversity of views about the objectives of the innovation.

3. Teachers encountered numerous problems when they made their first efforts to implement the innovation.

4. The inadequate strategies employed to help the implementation process constituted one of the most significant inhibiting factors.

5. The bulk of the teachers had on the whole a positive attitude to the innovation.

Comparing the Results of the Previous and Current Implementation Studies

In order to trace patterns of change in the implementation process, the research design should ideally have been based on some kind of longitudinal study that involved repeated measurements of the same samples over time. However, the present study cannot claim to be as precise as a longitudinal survey in view of the following factors:

1. Since the previous evaluation of implementation took place, the staff at schools have been changed. Teachers new to the profession are now teaching the Project; experiencing teachers with little previous knowledge of the Project, have taken over

the teaching of the subject, while those with adequate knowledge have moved to upper forms. It was, thus, not easy to maintain the participation of the entire original representative sample.

2. The data of the present study was not all collected exactly in the same way as the base-line data. It can be argued, however, that in order to ensure the comparability of data, it does not necessarily mean that the same measurement instruments should be administered repeatedly. Indeed, discussing the repeated administration of the same achievement test, A. Lewy (1977)[1] advances the view that it is perhaps more desirable to use parallel forms of the same instrument device than to use the same form of test repeatedly.

The current study did try to use, as far as was practicable, similar instrument devices as can be seen in Table E1. However, to the extent that the current study also aims at the use of more systematic methods of collecting and analyzing implementation data than was considered in the previous study, comparability could be said to have been violated to some extent. In other words, it is recognised that differences in the way the previous and current data had been collected could well lead to discrepancy between these two sets of data. It is a fact, however, that in studies of implementation, causes for discrepancy of results are bound to be multiple and complex.

However, to ensure comparability of data, attention will be paid particularly to the data of structured interviews. The formal interview with teachers (see Appendix III) was designed to ascertain teachers' views about the Project's objectives, and their perceptions of the inhibiting and facilitating factors of implementation, and

also to find out if shifts in their perceptions had occurred over time. The interview schedule was thus used to provide a comprehensive picture of teachers' perceptions about the events that occurred at two different points in time over a six years' period in connection with the new curriculum.

Table E1: Methods of Collecting Data for the Previous and Current Implementation Study

Previous Study	*Current Study*
1. Teacher Questionnaire. (closed items format).	1. Teacher Questionnaire. (closed and open items).
2. Unstructured observation of classroom behaviour and events.	2. Systematic observation of classroom. Use of two predetermined schedules, supported by observers' accounts.
3. Structured interviews.	3. Structured interviews. (same format as the one used previously and one designed to search information about implementation over a five to six years period).
4. Documentary evidence.	4. Pupil Questionnaire. (closed and open items).
	5. Standardized test. (objective and structured items).
	6. Documentary evidence.

Another way whereby comparability of data was ensured in this study, was the attempt made to collect the current data under conditions that resembled as closely as possible the original conditions

under which the base-line data were collected. Some basic information under which the new curriculum was initially implemented in the years 1976/1977 have been collected in order to identify which variables under the present conditions differ significantly. These variables relate in particular, to the following:

1. Teachers' perception of the Project's objectives.
2. Teachers' knowledge and understanding of the Project's philosophy and strategies.
3. Teachers' perception of their role in the new programme.
4. Teachers' perception of facilitating and limiting implementation factors.
5. Teachers' attitudes to the new curriculum.

Study Population

This aspect of the study pertains to a group of twenty teachers who had been involved in the implementation of the new curriculum over a period of four to six years. They represent a random sample of teachers who had been participating in the Teacher and Pupil Questionnaire Surveys, the classroom observation exercise and the Pupils' Standardized Test of the current study. They also represent fairly well the various sub-groups of teachers used in this study as tabulated in Table E2 on the next page.

Table E2: Structured Interviews - Population (N = 20)

Categories of Implementers	School Type			School Environment		Qualifications		
	State	Junior Secondary	Private	Rural	Urban	Degree Holders	Diploma Holders	Unqualified
High	1	4	4	4	5	2	7	-
Medium	1	3	3	4	3	1	5	1
Low	-	-	4	1	3	-	1	3
Total	2	7	11	9	11	3	13	4

Analysis and Results

As mentioned earlier, the data handled in this chapter evolved from the formal interview. These data relate to the views of twenty teachers during the initial and late implementation stages and the most appropriate analysis is by comparing the frequency distribution of their responses. The results will be discussed below:

A. Teachers' Understanding of the new curriculum over time

The teachers who were interviewed were asked whether they had a clear understanding of the new curriculum when they first started to use it, and then whether their understanding had increased over time. Their responses are recorded in Table E3.

Table E3: Teachers' Understanding of Social Studies (N = 20)

	Initial stage	*Late stage*
1. A clear understanding	2	20
2. Unclear about the Project	18	0

The two teachers who reported they had a clear understanding of the curriculum at the initial stage, described it vaguely as "a subject dealing with people". The majority who replied that they did not have a clear picture of it, mentioned that they were all perplexed by the new curriculum in terms of its content, objectives and methods of application. They admitted that they were exposed to all those aspects of the programme in the Teacher and Pupil materials, and in the course of regular workshops. However, simply following the instructions in the materials could not help them far in their own classroom situations under a range of unexpected constraints. The data indicate that during the late stage of implementation, all the teachers seemed to have a clearer conception of the innovation as a result of experience, supplementary reading, exchanges of views, with other colleagues at workshops, or as a consequence of having followed long-term training courses at the Institute of Education. The pattern of responses was the same among the various sub-groups of teachers.

Further questions were put to the teachers in an attempt to focus on their interpretation of the innovation. They were thus asked about their perceptions of the role changes that were expected of them. Table E4 illustrates their replies.

Table E4: Teachers' perceptions of their roles at the initial implementation stage (N = 20)

Teachers	*Roles*
A. Those who mentioned they had a clear understanding of their role changes (N = 8)	1. Act as a guide to pupils. 2. Maintain more interpersonal, friendly relationships in class. 3. Involve pupils in all sorts of activities ranging from surveys to Project work. 4. Develop pupils' personal values.
B. Those who said they were unclear about role changes (N = 12)	1. Social Studies being "an academic subject" like any other subject, we thought the same formal approach should be used.

The second category of teachers in Table E4 made it obvious they were not aware at first that new roles were expected of them. Those who reported that they were conscious of changes to be made in their behaviour were, in fact, teachers who have been trained through long-term courses in the use of the Project's materials. However, while they knew that certain changes had to operate in the classroom, these teachers could not specify how, in fact, they should perform in the classroom. No one actually perceived the new role as being a shift from being the subject expert, the sole transmitter of knowledge in the classroom to an advisory role, arousing inquiry on the part of the pupils and facilitating their learning.

Asked whether they had a better understanding of their role changes four to six years later, all twenty teachers replied in the affirmative, and gave examples of how they have tried to improve their classroom activities over time. Such activities range from the use of questioning techniques, class discussion, survey work and Project work,carrying out extra-mural activities to abandoning the tradition of giving notes to the class. Finally, another way of determining the teachers' understanding of the innovation, was to ask them about the extent to which they were clear about the Project's objectives during the initial and late stages of implementation. The responses are indicated in Table E5 below:

Table E5: The Clarity of the Project's Objectives to Teachers (N = 20)

	Initial stage	*Late stage*
1. Clear about the objectives	2	18
2. Unclear about the objectives	18	2

The majority of the teachers stated that initially they were in the dark about the objectives. Even the regular workshop sessions could not at first illuminate them on such a "complex" aspect of the new curriculum. Over time, the long-term in-service courses have been of valuable help to them in this respect. The two teachers who reported that the objectives were not clearer to them now, were in fact, referring to the affective objective which were usually found difficult to implement in the classroom.

Summing up, these findings about the teachers' perceptions of their understanding of the new programme reflects the evolutionary character of the innovation.

B. Teachers' perception of the Inhibiting factors of Implementation

A second dynamic aspect of the implementation process that was investigated was the teachers' perception of the problems they had to face while implementing the innovation over time. It is reasonable to assume that when teachers started working on the new curriculum, they were bound to face a variety of problems, but with increasing knowledge and experience, these problems would diminish in number and variety. Table E6 indicates teacher responses to the question about the occurrence of problems throughout the initial and late implementation stages.

Table E6: Teachers' responses about the occurrence of problems of implementation (N = 20)

Occurrence of Problems over time	*Number of responses*	
	Yes	*No*
1. The occurrence of problems during the initial stage.	20	-
2. The persistence of earlier problems over time.	14	6
3. The occurrence of newproblems during the late stage.	20	-

The findings suggest that teachers have been exposed to specific types of problems during their efforts to implement the innovation. Table E7 shed light on the main types of problems and the number of teachers who faced them.

Table E7: Types of Problems met during Implementation (N = 20)

Main Problems	*No. of Teachers Meeting Problems During Initial Stage*	*No. of Teachers Meeting Problems During Late Stage*
1. Inadequate time allocated to cover overloaded programme.	10	6
2. Interference of the complex vocabulary and sentence structure in materials with pupils' language problems.	12	7
3. Inadequate resources.	9	9
4. Tackling interdisciplinary themes.	10	5
5. Teaching modified inquiry skills.	14	5
6. Carrying out fieldwork outside schools.	8	4
7. Availability of official materials.	5	-
8. The discontinuation of the Social Studies curriculum and the problem of choice of subject beyond Form III.	-	20
9. Teaching about values.	-	6
10. Ability to assess pupils' achievement effectively in line with the proposed national examinations.	-	6

Not one single problem was common to all the teachers during the initial stage of implementation. To the majority of them, however, teaching inquiry skills proved to be a serious problem. The teachers reported that they did not know how to make effective use of the strategies proposed to them in the materials. Although these strategies relate to a modified form of inquiry skills, to most teachers they tended to deviate from established practices. The teachers were also concerned with the problem of text comprehension in view of their pupils' poor vocabulary.

Some of the teachers revealed their feelings of incompetence when handling themes which did not fall within their special field. Their lack of knowledge of certain subjects touched upon in the integrated curriculum did not allow them to teach with confidence.

When probed about the persistence of their earlier problems, the teachers stated that some of them continued to exist, but to a lesser extent. It is relevant to note that the problems which continued to exist, were those which were beyond the teachers' control, namely inadequate time, overloaded programme, a scarcity of resources and language problem. On the other hand, the fact that many teachers did not face in later years the problem of teaching inquiry skills, led to the conclusion that they have, through long-term training courses, overcome this feeling of incompetence.

Table E7 also presented the emergence of new problems during the late stage of implementation. All twenty teachers indicated that the discontinuation of the Social Studies programme beyond Form III has become an acute problem which they did not face earlier. The idea that the integrated Social Studies curriculum should branch off into separate subjects (Geography, History, Economics and Sociology) did not appeal to the users for various reasons.

On the one hand, there was the increasing popularity of the integrated curriculum among both teachers and pupils, who would naturally have preferred to continue with the subject in upper forms. Both teachers and pupils had come to be deeply involved in the new curriculum which they regarded as lively and interesting. The new programme encouraged the active participation of pupils in class, the sharing of ideas and opinions in the classroom and the development of the pupils' critical thinking.

There was also the fact that both teachers and pupils had put three years of hard work and interest in the new programme, hoping that they would continue with this subject at upper forms. The schools were, in fact, aware of the original proposal of the curriculum developers to extend the innovation to Form V.

Thd discontinuation of the Project beyond Form III might also mean that pupils would lose interest in a curriculum which was not leading towards Form V and would prefer a return to traditional disciplines and formal methods of teaching. Moreover, the teacher whose performance was generally rated by how well-prepared his or her students were for the Form V external examinations, was rather concerned about the inadequate preparation for these examinations from Form IV. Many teachers were still not thoroughly convinced about the positive impact of the new curriculum in terms of preparation for the Cambridge School Certificate Examinations. It must be recognised, of course, that some of these subject specialists, particularly those in History, who were already well on the way to a reorganisation of the content of their subjects, could strongly object to what might be considered as a destruction of the integrity of their subjects. Documentary evidence (for instance, the reports of the Local Area Cambridge Committee) reveals the sharing of this apprehension about

the new programme providing inadequate background to the Form V subjects by certain authorities.

Finally, there was also the acute problem of choice of subjects at School Certificate level. This is reflected in the following table relating to the number of pupils taking School Certificate and Higher School Certificate Examinations in History, Principles of Accounts and the relevant Social Science subjects during the past five years.

It is clear from Table E8 that differential emphasis has been placed on the subjects in Senior forms at different times. The growth of Economics has been impressive; it has overtaken the popularity of several well-established traditional School Subjects because of the opening up of employment opportunities for people trained in commercial subjects.

History and Geography in particular have been facing serious competition from the Commerce Subjects in Schools. It would seem that both subjects do not appeal as examinable subjects for practical reasons; Geography, unless well-taught is considered to be a difficult subject to handle at examinations level. Insofar as History is concerned, there is a growing disinterest in the European/British History Syllabus and a growing dissatisfaction with the newly-introduced History of Mauritius syllabus. The failure of the History of Mauritius programme to attract candidates at its take-off stage has more to do with the absence of appropriate materials and of a proper infrastructure for the implementation of the new programme than with getting schools to agree to try the new syllabus.

It is obvious, therefore, that the pupils are facing problems in the choice of subjects beyond Form III, and for want of better

alternatives, there is a tremendous rush on subjects like Economics, Commerce and Principles of Accounts. The latter is not really a Social Science, but it has affinity with Commerce, Economics or Business Studies in schools. It is precisely for this reason that the majority of teachers and pupils would have liked Social Studies to take its place in the existing system of option choices.

Furthermore, some teachers have referred to the gap existing between the new curriculum and the Cambridge programmes in upper forms. The curriculum in upper Secondary Schools which is geared towards external examination requirements, tends to neglect the type of abilities, skills and attitudes the innovative programme is trying to impart. As it stands, the Social Studies curriculum does not have much chance to make a significant impact on the thinking of Senior Forms teachers and pupils.

The apprehension that the introduction of Social Studies may not prepare students adequately for further studies in Forms IV and V has been a common feature among teachers of Social Studies in all countries where this programme has been established. But such apprehension can be easily dissipated when teachers come to understand that all the main ideas and skills in the contituent subjects have been touched upon in the Social Studies programme.

Table E8 referred to earlier is indicated on the next page.

Table E8: School Certificate and Higher School Certificate Entries

Subjects	1976		1977		1978		1979		1980	
	S.C.	H.S.C.	S.C.	H.S.C.	S.C.	H.S.C.	S.C.	H.S.C.	S.C.	H.S.C.
History (including History of Mauritius)	4 526	2 885	3 120	184	2 673	176	1 978	131	-	116
Geography	615	66	619	66	499	78	436	71	399	13
Economics and Public Affairs	2 141	119	4 140	151	5 162	121	5 945	94	-	-
Commerce	-	-	6 646	-	7 728	-	8 972	-	9 708	-
Principles of Accounts	-	-	7 036	-	8 207	-	9 233	-	9 723	-
Economics	-	373	-	536	-	773	-	1 023	-	-
Sociology	-	-	-	-	213	-	-	-	282	-

(Source: Statistics provided by the University of Cambridge Local Examinations Syndicate)

The teachers also reported that they had not always obtained the help and advice they needed to solve their problems throughout the implementation process. It is relevant to examine Table E9 in this respect.

Table E9: Teachers' Perceptions of Help from the Main Institutions (N = 20)

	Initial stage				*Late Stage*			
	A	*B*	*C*	*D*	*A*	*B*	*C*	*D*
1. Mauritius Institute of Education	5	4	5	5	10	5	3	2
2. School	-	5	5	10	-	5	5	10
3. Inspectorate	-	-	-	20	-	-	-	20

A. Great B. Some C. Little D. None

The teachers complained bitterly about the complete lack of help from the Inspectorate. Some explanation is necessary here, since in most countries it is a commonly accepted fact that the Inspectorate should play a significant part in facilitating the implementation phase of any innovation. In Mauritius, however, the pressing needs of the Inspectors from the Ministry of Education and from the Private Secondary Schools Authority† are to deal more with administrative matters rather than with pedagogical matters.

On the other hand, the change agent (the Mauritius Institute of Education) was seen to have been of help in varying degrees to the teachers. The long-term training courses and regular workshop sessions have been found quite useful. The main complaint about the change agent help was the failure of the curriculum developers to visit teachers, to provide on-the-job hints and aids. The materials provided by the developers were certainly helpful, but personal contact with the classroom teacher was considered extremely important.

Regarding help from the school, some teachers mentioned that their head had been encouraging them in their innovative efforts; a few others were conscious of their school financial constraints and considered their administrators as neither help nor hindrance. To a reasonable number of teachers, however, the rigid and inadequate timetabling arrangement, the lack of adequate resources, the adverse classroom conditions and the lack of encouragement in terms of conducting fieldwork outside the school, constituted serious constraints at school, and were not compatible with the Project's strategies. On the whole the kind of help provided by the school was mainly confined to releasing teachers for attendance at workshop sessions, and to making available the Project's materials.

C. Teachers' attitudes towards the innovation over time (N = 20)

The teachers were asked during the interviews to state the type of reactions they had towards the innovation over the years. In this connection, it might be important to point out that the question was not asked in such a way as to elicit a positive rather than a negative response. In fact, teachers were presented with five possible types of reactions and they had to select the one which most appropriately described their reaction. The data in Table E10 reveal that throughout the initial and late implementation stages, the teachers had very positive to somewhat positive attitudes to the new curriculum.

Table E10: Teachers' reactions to Innovation over time (N = 20)

	Initial Reaction	*Late Reaction*
Very positive attitudes	5	7
Positive to somewhat positive attitudes	15	13
Indifferent	0	0
Somewhat negative	0	0
Very negative	0	0

The positive responses reflect teachers' belief that the new curriculum was relevant and beneficial to the pupils and that there was a great need for it in schools. They felt that there was a gap in the curriculum prior to the introduction of Social Studies. The Mauritianised content of the new curriculum, and its variety of teaching techniques make it a livelier and more challenging subject than the traditional subjects.

None of the teachers has expressed indifferent or negative attitudes. Four have shifted from somewhat positive to very positive feelings over time, while two have changed from very positive to somewhat positive attitudes. These two teachers claimed that the commercial publications of the curriculum which had replaced the units of work, seemed to have killed the adventurous spirit that used to prevail in the classroom previously. Henceforth teachers had to implement the teaching/learning situations foreseen in the textbooks. All thirteen teachers who have expressed a positive to somewhat positive attitude, maintained that their pupils and themselves were rather dissatisfied with the current decision not to go ahead with the innovation in Higher forms.

In this particular connection, it could be stated that the new curriculum seemed to have produced unintended effects on teachers and pupils in the long run. The programme has worked so well and is still so popular in schools that it has raised expectations about its continuation in Senior forms, and the decision to discontinue the Project beyond Form III has over time produced anxiety and disappointment.

Finally, all the teachers who were interviewed, reported an increase in their eagerness to implement the innovation. It is

obvious therefore that teachers' positive attitudes had remained remarkably stable throughout the initial and late implementation phases, notwithstanding individual shifts in the degree of positiveness. The impact of four to five years of confrontation with the problems and disappointments of implementing the new curriculum, has not caused the teachers to deviate in any way from their commitment to the Project.

Summary and Conclusions

The purpose of this part of the study was to evaluate the impact of teaching the new curriculum on teachers' understanding of the Project's philosophy and strategies, their perceptions of inhibiting and facilitating factors, and their attitudes towards the innovation, at two different points in time. The main conclusions emerging are as follows:

1. The teachers were not clear about the innovation during the initial phase of implementation. They were on the whole perplexed about the types of behaviour that were expected of them when implementing the new curriculum, and were very much at a loss regarding the Project's objectives. These results are in agreement with the data obtained from the previous study of implementation.

2. An outline of the Project's aims and objectives, as well as the principles of applying the new programme were provided to the teachers in the materials and in workshop sessions. However, this alone could not lead to the successful implementation of the new ideas, because by and large, the same teachers who operated the old prescriptions, were also operating the new curriculum. A more ambitious effort to communicate the new

curriculum's intentions and strategies to the implementer was required. This systematic *"consumer communication"* strategy (Becher and Maclure, 1978)[1] was in fact adopted during the later stage of implementation.

3. It is not surprising, therefore, that the teachers have reported a better understanding of the innovation lately. The data obtained from the Teacher Questionnaire support the finding from interviews that teachers have developed significantly in terms of their perceptions of the Project's philosophy, its objectives and the approaches recommended by it. For instance, there was more unanimity among the teachers actually in the ranking of objectives than there was previously. There was also a positive change relating to teachers' ranking of skills and attitudes' objectives. Measurements of students' growth have reported a similar gain.

4. However understanding the new curriculum well enough did not guarantee that it was successfully implemented even at a late stage of implementation. The question of how such an understanding could be effectively translated in the reality of classroom teaching was an important one to consider. Evidence from classroom observation has shown that while some teachers were more or less in sympathy with the spirit of the new curriculum, others were in fact using their traditional ways of teaching for several reasons. On the one hand, they needed to be prepared more carefully for this changing role so as to improve their competence to engage in such a role. On the other hand, they were not willing to give up their role as the source of all information in the classroom. They were also concerned about the implementation of value objectives. Such

objectives which were given high priorities were not in fact implemented successfully in the classroom. Under the prevailing examination-conscious atmosphere in the island, a teacher's standing derives from his ability to communicate knowledge of his speciality, knowledge of facts commensurate with the requirements of examinations, not from his ability to implement value objectives or skills objectives in the classroom.

5. Teachers faced several problems throughout the initial and late implementation stages, and some of the initial problems have continued to exist. The persistent problems related to the failure of bringing changes in the conditions under which teachers interact. Such changes as the allocation of time, the allocation of satisfactory classroom conditions, inadequate provision of resources, improvement of the Project materials, was necessary to support the teachers in their implementation efforts. New problems have cropped up during the late implementation stage, and they are concerned particularly with the discontinuation of the innovation beyond Form III and the difficulty in the choice of subjects for Form V. These problems reflect socio-political forces at work during the course of innovation. Thus it was clear that forces beyond the control of those involved in implementation were also helping to shape the process of implementation.

6. Teachers have maintained a remarkably positive attitude towards the innovation during both initial and late implementation stages, in spite of the problems they have had to encounter. The interview data are substantiated by the findings obtained from the Teacher and Pupil Questionnaires' data. Such findings need some explanation. It would seem that in general the

Social Studies innovation has exerted a good impression on teachers, pupils and the public at large. Constant contact with teachers through regular workshops and long-term training courses, coupled with the mauritianised content of the programme and its relevance to the needs of the pupils, the teaching strategies which encourage class participation - all these account for the strong appeal of the new curriculum.

The data presented in this chapter confirmed fairly conclusively the hypothesis about the impact of time upon the relative improvement of the teachers' grasp of the Project's intentions, their classroom practices and attitudes as opposed to their innovative efforts during the initial stage of implementation; this was postulated in hypothesis 1 of this chapter. It was found that, on the average, the more experienced and better trained the teachers were in teaching the new curriculum, the clearer they were about their changing role in the classroom, about the Project's objectives, and the more favourable their attitudes were.

The possibility that the novelty of the innovation would wear off in time and that teachers would start displaying a negative attitude to the Project was not borne out by the present data. The impact of four to six years of confrontation with the difficulties of implementing the new curriculum, has not caused the teachers to deviate in any way from their commitment to the Project. There seems thus to be a real harmony between the common belief about implementation results being more effective over time and the actual evidence for that belief.

The results regarding hypothesis 2 and 3 were also quite conclusive. Problems of initial implementation did persist during the late stage and these persistent problems related to the failure of bringing about changes in the conditions under which teachers interact with their class. Problems dealing with the teachers' knowledge of the innovation were not as serious as they were initially. On the other hand, a new set of problems occurred at a later phase in the course of implementation, reflecting the evolution of the innovation in line with the current socio-political context.

It might be argued that this fairly exact fit of data of hypotheses 1, 2 and 3 in this chapter could be due to the quality of the teachers who were interviewed, and it must be admitted that more than half of these teachers belong to the category of high to medium implementers, or to the qualified and trained teachers. However, the fact that the low implementers or the unqualified teachers hold reactions and perceptions similar to those of the other categories of implementers shows that the influence of the quality of teaching on the responses is not apparent.

It could also be argued that the structured interviews did not constitute a particularly sensitive instrument, and was probably not ideally valid. However, the findings obtained here were broadly substantiated by those of the questionnaires, classroom observation schedules and the standardized test. In other words it is possible to generalise with some confidence on these data and to reach the following conclusions-

1. Teachers learn by their cumulative experience in implementing a new curriculum, and tend to increase their grasp of the

curriculum; intentions and strategies and maintain these positive reactions over time.

2. Certain problems characteristic of initial efforts are likely to continue during the late stage of implementation, especially when they relate to structural changes, for example, time allocation or the provision of resources.

3. Some problems are common to both initial and late implementation phases, but different problems particularly connected with the socio-political context, for example, the decision to discontinue the innovation beyond Form III or the provision of subjects at School Certificate level may emerge during the course of implementation.

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1. Lewy, Arieh., Handbook of Curriculum Evaluation, UNESCO, 1977, 156.

† The Private Secondary Schools Authority was established in 1977. It is responsible for the administration, control and review of all matters pertaining to grants and loans in private secondary schools. It is also responsible for inspecting these schools.

2. Becher, T. and Maclure, S., The Politics of Curriculum Change, Hutchinsons, 1978, 115.

CHAPTER VIII

OVERALL REVIEW AND GENERAL CONCLUSIONS

There were three main aims of this investigation. The first was to measure the degree of implementation of a Social Studies curriculum innovation programme in Mauritius according to the criteria of teachers' and pupils' understanding of the objectives, the philosophy and the strategies of the new curriculum, their perceptions of the facilitating and inhibiting implementation factors, their attitudes to the new programme and their interactions in the classroom. The second aim was to consider the processes involved in the implementation of the Project and the extent to which the new curriculum had been modified or adapted by the implementers. The third aim was to investigate whether different patterns of influences affect initial and late implementation stages of an innovation.

These aims led to a series of questions or hypotheses being formulated about the likely outcomes of implementation. These hypotheses were then tested in the empirical part of this study, namely in Chapters III to VII. Previous research related to the problem under investigation here was reviewed in Chapter I, and in the same Chapter, fourteen questions were formulated. These covered the following areas: the influence of structural changes on the use of the innovation (1); teachers' understanding of the Project's objectives, philosophy and rationale (2, 3); teachers' attitudes towards the Project (4); extent of Project's intentions implemented at classroom level (5); relationships between teachers' and pupils' preferences regarding objectives (6); relationships between teachers'

preferences and expectations and pupils' achievement (7); classroom interactions during the process of implementation (8); the modifications of the innovation by implementers (9); pupils' perception of teacher classroom strategy and their own attitudes towards the Project (10); extent of pupils' achievement of the objectives of the programme (11); teachers' grasp of the Project's objectives and philosophy over time (12); persistence of inhibiting influences over time (13); and patterns of influences during initial and late implementation stages (14).

The design of the present investigation was of the survey type. A national survey of Form III Social Studies teachers (N = 210) was carried out for their perceptions of the innovation. Out of this nationwide survey, 80 teachers were randomly selected for systematic classroom observation. This multi-stage sampling was further used to select about 1 900 pupils in their third year of lower secondary school (representing 53 classes and teachers) for a questionnaire survey, and over 1 600 pupils (representing 44 classes/teachers) for a standardized test. Twenty teachers of the original sample who have worked with the Project over a period of 5 to 6 years were asked to participate in formal interviews lasting over one hour and supplying further details of influences affecting implementation. The results of all these measurements are conveniently reviewed under the areas relating to the questions or hypotheses described above, notably in Chapters III to VII.

Attention will be paid, first, to the teachers who generally play a centrol role in influencing the success or failure of the implementation of a new curriculum. It was predicted that

1. teachers would implement the Project more effectively when current structural changes are favourable to the use of the Project;

2. qualified and trained teachers would be expected to show a greater awareness of the Project's objectives, of its philosophy and rationale;

3. teachers' priorities in the ranking of the Project's objectives would not correlate with their expectations of the feasibility of achieving these objectives;

4. teachers would show more favourable attitudes towards the new curriculum if they were well-trained.

In the major analyses, hypotheses 1, 2 and 4 were confirmed. Regarding hypotheses 3, however, there was no evidence at all supporting this prediction in the correlational analysis. The conclusion with respect to the occurrence of structural changes, was that although there was some evidence of certain structural changes, virtually no such changes did really occur. For instance, with regard to timetabling arrangements, certain schools had allocated the appropriate number of pupils to the new curriculum but a reasonable number of schools maintained a rigid timetable. Teachers felt constrained by this restricted timetable which delayed progress and resulted in a continual rush to meet deadlines.

Other practices which were incompatible with the innovation included the operation of inarticulate curricula side by side and the existence of the external examination system at upper secondary level. The traditional disciplines (for example, History, Geography, Economics ...) are still presented at Form V level and are associated with a clear career structure; naturally, the examination pressures are counteracting the pattern of use envisaged by the new integrated curriculum. Briefly, then, in the absence of appropriate structural change, teachers felt constrained in their attempts to implement the Project success effectively.

Regarding teachers' knowledge of the Project's objectives, philosophy and rationale, the superiority of the trained and qualified teachers over the untrained group was wholly confirmed. The results of chi-square tests applied to the teachers' ranking of individual objectives and to their perceptions of the Project's ideas and philosophy revealed high statistically significant differences between the trained and untrained teachers. It was obvious that the latter were not aware of the special emphasis of the Project on certain objectives, and of the positive expressions of the ideas underlying the Project's philosophy and strategy.

As mentioned earlier, the predicted disparity between teachers' priorities and expectations of objectives was not detected. The relationship between teachers' top priorities and expectations was analysed by Spearman's rank-order correlations coefficient and the results showed a highly significant correlation between these two. Both teachers' priorities and expectations showed a high ranking . . given to the affective objectives as compared to the ranking of skills objectives. The recall of basic facts was equally given a

relatively high ranking by the teachers. The fact that the findings showed no substantial disparity between priorities and expectations reflects a lack of realism on teachers' part. Knowing the constraints of their school background and the pressure of external examinations, many teachers had reasoned that they could transform their priorities into reality. This rather progressive image of their teaching was not consonant with the reality of the classroom situations.

Finally, regarding teachers' attitudes towards the new curriculum they were found to be on the whole positive in spite of the fact that teachers have bitter feelings about the discontinuation of the new curriculum beyond Form III. Teachers liked a variety of things about features in the new programme ranging from good class participation to the treatment of social and relevant issues and from the variety of teaching techniques to the development of critical thinking. However, on most tests carried out, the trained teachers seemed to have more highly favourable reactions towards the innovation than the untrained teachers. The results thus seemed to be in accord with hypothesis 4.

Implementation of the Project's Intentions at Classroom Level

The major predictions here are presented under questions 5, 8 and 9. Since classroom implementation of the Project's intentions depends very much on teachers' understanding of the principles underlying the new curriculum it was predicted that trained and qualified teachers would be more effective implementers of the new curriculum than untrained teachers. It was also expected that a great deal of adaptation of the Project's materials would take place in the

classroom and that untrained teachers would tend to adapt the Project to their own needs without significantly modifying their own behaviour.

These hypotheses were examined in two separate analyses. First, the Flanders' interaction system data were analysed with a view to providing an idea of the quality of teacher-pupil interaction. The results of chi-square analysis showed that the qualified and trained teachers performed significantly better than the untrained group. The qualifications effects were significant in three categories of F.I.A.C. (teacher response at the .05 level, teacher lecture at the .01 level, and pupil initiation at the .001 level). The trained teachers were more inclined to accept and clarify pupils' ideas and feelings, to ask questions and solicit pupils' answers, and to encourage pupil initiation than the unqualified group; the latter were particularly prone to lecturing.

Second, the Evans-Behrman schedule was used to measure what actually happened in the classroom during the implementation process. The results revealed that qualified teachers were more inclined to implement the Project's strategies than unqualified teachers. They were particularly superior in the clarification of lesson objectives, the development of concepts, the maintenance of a balance between factual and thought-provoking questions and in the handling of discussion work. The qualification effects were significant in the case of 11 items (out of 12) of the schedule (6 of them at the .001 level, 2 at the .01 level and 3 at the .05 level).

These two separate analyses therefore do lend support to the view that trained and qualified teachers were more effective

implementers. Finally, a similar finding was obtained from factor analysis which was used to classify teachers in three categories of implementers and which drew on the two analyses of F.I.A.C. and Evans-Behrman schedule data. More qualified teachers were found to fit into the group of high implementers.

With respect to the adaptation of the Project's materials, it was found that since the new curriculum posed a challenge during the implementation process, the teachers ended up creating a workable system based on a selection of elements from the Project which were consistent with existing practices. This finding was borne out by the data from both observation schedules. The translation of the Project's principles into existing practices was found among both trained and untrained teachers, but was particularly obvious among the latter.

The untrained teachers were facing uncertainty about the methods of teaching the new curriculum, and therefore, they decided to modify the Project's intentions to suit their expository style of teaching. They had to adapt the new curriculum so as to continue to function. Trained teachers were conversant with the Project's ideas and strategies and were trying to implement its main features as far as was practicable in their classroom context. However, there were no guarantees that the properly trained teachers will implement the Project's materials and ideas as expected. In the face of other types of uncertainties (for instance, uncertainty about adequate preparation of the pupils for Form V examinations or about the treatment of value issues), trained teachers were also inclined to leave out certain elements of the Project which were not consistent with

existing practices. There was for instance a discrepancy between their ranking of objectives and their actual implementation of these objectives. Their adaptation of the Project's materials, however, was more systematic and successful than that of the untrained group. In other words, it could be said that the intentions of the new curriculum were being circumvented by design in the case of trained teachers, as well as by default by untrained teachers. The adaptation was done partly through the trained teachers' desire to operate unambiguously while implementing new ideas and strategies in a prevailing examination-conscious atmosphere and partly through inadequate understanding of the Project's ideas by the untrained teachers. These conclusions support the findings of other researchers in this field, notably those of Olson (1980)[1] who states that *"an innovation is in the eye of the beholder"*.

Pupils' Perspectives

The issues here relate to Questions 6 and 10. It was predicted that pupils' priorities of objectives are likely to differ from those of their teachers but that these priorities will depend on their perceptions of their teachers' ranking of such objectives (1). It was also predicted that pupils on the whole could reveal a well-balanced picture of their teacher classroom strategy (2) but that pupils of qualified teachers will be able to perceive their teacher implementation strategy more clearly than pupils of untrained teachers (3) and that pupils of high implementers will be superior to the other groups of implementers in such perceptions (4). Finally, it was expected that class sex composition would not show differences in perceptions among the pupils (5) and that the majority of the pupils will show a positive attitude to the new curriculum (6).

Of these five hypotheses, only hypothesis 2 was not satisfactorily resolved, largely for methodological reasons, while there was empirical support in varying degrees for the other four hypothesis. Rank-order correlation analyses revealed unanimity between pupils' ranking and their perceptions of the teachers' ranking, but discrepancies occurred between these two ranking and the teachers' priorities. This would seem to indicate that there was a gap between the teachers' expressed views on objectives and their actual implementation of these objectives, and that teachers did not seem to be aware of the impact that their classroom behaviour was having on their pupils' perception. Pupils were identifying themselves with their perceived teacher ranking, and this explains the strong agreement between their ranking and their perception of the teachers' ranking. Contrary to teachers' priorities, the knowledge of facts which was stressed in the classroom, was given top priority in the lists of pupils' ranking and perceived teacher ranking. On the other hand, the affective objectives were placed well down in their lists.

The second hypothesis predicted that pupils could reveal a well-balanced picture of their teacher implementation strategy. It was found, however, that no such clear-cut picture emerged. A possible explanation for this may be that the data were not very reliable in the testing of this prediction because of ambiguous interpretation by the pupils. There was also partial confirmation of hypothesis 3 as a result of the practical weaknesses in the data referred to earlier. It was found that although the patterns of responses among pupils of qualified and unqualified teachers were similar to some extent, the pupils of the first group of teachers were significantly superior in their perceptions.

Partial confirmation of the fourth prediction was obtained in other analyses of these data from the point of view of the perception of pupils taught by the three groups of implementers. The results of chi-square tests reveal that pupils of the medium implementers appear to be superior to the other groups in the perception of their teachers' implementation strategy, while pupils of high implementers show better perceptions than the low implementers' group. Evidence of this confirmation was further borne out by the results of a one-way analysis of variance. The obtained value of F was 8.22 at the $P < .001$ significance level.

On the other hand, the results of a test of linearity indicated the absence of a linear relationship between level of implementation and pupil perception: ($F = 14.13$, $P < .0002$, $R = .03$, $R^2 = .001$). R^2 is extremely small, and not so much of the variance in the dependent variable is linearly explained by the independent. The results clearly indicate that the variables are not well modelled by a linear model.

In view of all these methodological problems, it can be said that hypotheses 4 was confirmed partially and not unambiguously.

There was unequivocal confirmation of hypothesis 5: class sex composition did not show any impact on pupils' perceptions of their teachers' implementation strategy. The results also confirm hypothesis 6: the pupils were on the whole positive about the new curriculum. The findings are in keeping with the conclusions drawn from the teachers' data. Like their teacher, the pupils expressed much disappointment with the discontinuation of the subject beyond Form III.

Pupils' Performance in the Main Areas of the Project's Objectives

Pupils' performance was the subject of Question 11; it was hypothesized that pupils of high implementers would achieve higher scores across the main areas of objectives than pupils of medium implementers, and pupils of medium implementers would perform better in those areas than the pupils of low implementers. For this prediction to be confirmed it was necessary for *"the levels of implementation"* effects to show statistical significance. The results were as predicted.

There were large average score differences between the high implementers and the other groups, and the former were significantly superior to the latter on all items of the test. The results of one-way analysis of variance show that the mean differences were significant in all four areas of objectives, with F values significant at $P < .0000$. The multiple classification analyses confirm the relationship between level of implementation and performance, the multiple R value being .40 in two clusters of objectives, and around .46 in the other two clusters. Finally, the contrast coefficient matrices specified the contrasts between the mean scores of the three groups of implementers, with T values in all four areas of objectives being significant at $P < .0000$.

This is sufficient to provide a basis for any firm conclusions. Since the trend in favour of the pupils of high implementers operates right across all the areas of objectives, it can be concluded that pupils taught by high implementers tend to perform relatively better than pupils of the other categories of implementers, and maintain an overall superiority in the test.

Patterns of Influences affecting Initial and Late Implementation Stages

The remaining predictions covering questions 12 to 14 deal with the patterns of influences on the implementation process over a period of five to six years. It was predicted that, given sufficient exposure to the new curriculum, the teachers would improve their knowledge of the Project, their classroom practices and their attitudes (12), that some of the inhibiting influences at the initial stage of implementation would not persist over time, while some would continue (13) and that new inhibiting factors would crop up at the late stage of implementation (14).

The following points that are of practical relevance emerge from an analysis of the frequency distribution of teachers' responses during formal interviews:

1. Teachers learn by their cumulative experience in implementing a new curriculum, and tend to improve their grasp of the Project's intentions and their classroom strategies over time. The impact of five to six years of confrontation with the difficulties of implementing the new curriculum, has not caused teachers to deviate in any way from their positive attitudes towards it.

2. Certain problems faced by teachers during the initial stage of implementation, especially those relating to structural changes (for example, time allocation, provision of resources examination), are likely to continue at a later stage of

implementation. On the other hand, inhibiting factors which are under the teachers' control (for example, feeling of incompetence with an integrated curriculum) are not as serious later as they are initially. Such factors tend to be overcome initially by training courses.

3. New problems crop up during the late stage of implementation, reflecting the evolution of the innovation in line with the current socio-political forces. Thus the decision not to continue the new curriculum beyond Form III is an indication of the influence of the politics of curriculum innovation as a determinant affecting implementation. An innovation tends to shift with the politics of the times, and the influence of pressure groups who control what curricula are in schools.

GENERAL DISCUSSION AND CONSIDERATION FOR FUTURE RESEARCH

The major concern of this investigation has been an evaluation of the implementation of a new Social Studies curriculum in secondary schools in Mauritius. The first question which may be asked therefore is as follows: are the results of the investigation strong enough to be used as a basis for decision-making at classroom level or at management level? The findings of this study have brought forth certain relevant points which are worthwhile considering here.

The whole field of curriculum implementation is a relatively new one and is in a constant state of flux. New definitions of the concept, new insights on the implementation process and ways of evaluating this field are being put forward. This should be

considered in evaluating the results of this present investigation. It is a fact that research in any field becomes rapidly outdated before it is published.

The transitory nature of purely practical problems stresses the importance of basing research within a more stable theoretical framework. This explains the constant reference to the main "theories" on the determinants of implementation and on implementation evaluation in Chapter I. Theories are useful in the sense that they help to give a sense of continuity to any past, present and future research problems, and also help to give a greater generality to any particular research findings that emerge.

It is hoped, therefore, that there is some theoretical sense in resting the approach to implementation evaluation on the assumption that a variety of variables influence the levels of implementation achieved within any innovative programme. This approach measures the levels in the teachers' implementation of a new programme. Three levels of implementation were identified in the present study, ranging from low to medium and high implementers. They were defined by the teaching behaviours exhibited by implementers. These teaching characteristics were described by the relative frequency with which teachers made use of the categories on the Flanders' Interaction Analysis system, and with which they implemented the main elements of the new programme as measured on the Evans/Behrman Schedule.

The three levels of implementation obtained by a factor analysis of the classroom data, were characterized by an increasing ability of the users to implement the innovation effectively in line with the

Project's intentions. They were also characterized by the fact that if an implementer is to proceed from low to high level of implementation, he needs to show an increasing ability to adapt the programme successfully to meet the needs of this classroom setting. These levels of implementation were used as important predictor variables in considering pupils' perceptions of objectives and of their teacher classroom strategies, and also in estimating the effects (outcomes) of the use of the innovation.

There are many theoretical problems, here, that need investigation in their own right - such problems would include, for instance, the more exact definition of the levels of implementation - but these considerations are beyond the scope of the present investigation. At least, it seems from the results of this study that such theoretical assumptions that have been made are adequate to generate hypotheses that can be tested in the school and classroom contexts. Some of these predictions (for example, the impact of different levels of implementation on pupils' achievement or the relationships between teachers' qualifications and levels of implementation) have been readily confirmed. Very few predictions (for example, the disparity between teachers' priorities and expectations of objectives) have been partially confirmed or rejected. This fact, thus, lends support to the further development of this kind of theorizing about the concepts associated with levels of implementation and with the use of these levels as possible predictors of achievement in the main areas of teaching objectives.

The second question which can be asked at the more practical and methodological level is as follows: do the results of the current study present a reliable evaluation of the implementation

of a new curriculum? On the question of the subjective interpretation of the results, it is a fact that curriculum research can never be value-free; as Barnes (1981)[2] puts it: *"Researchers into the curriculum are in the business of forming opinions"*. However, great precautions were taken to minimize the effects of bias resulting from the researcher's expectation and interpretations; some of these precautions were specified in Chapter II on the design of the study. Moreover, the use of the method of triangulation in measurement procedure, using both qualitative and quantitative measurement, tended to reduce the threats to the generality of the design.

Regarding the point about sampling, there is perhaps not much to say. The problem of collecting data in a small island was not too complex to rule out the practical possibility of a census for the Teacher Questionnaire Survey. Stratified random sampling on a nation-wide basis was used for the other measuring instruments. These stratified random samples, based on the use of a multi-stage sampling were drawn from a wide cross-section of the schools and classes. The analyses presented earlier showed that there was no tendency for responses to the various tools to be unequally distributed according to teacher sex, class composition, type of school, school environment and so forth.

Finally, another point worthwhile mentioning with regard to methodological considerations is that the approach taken in this study did include reference to effects over time. This is an important aspect when considering implementation evaluation. This study has given sufficient thought to this empirical question. The new curriculum had been in operation in schools long enough (six years

at the time of the investigation) for teachers and pupils to become used to it so that its effects became noticeable. It was thus decided to evaluate the new curriculum at two different points in time so as to detect changes in the factors affecting the implementation process. The same teachers were asked for their views on influences at both initial and late implementation stages to see whether pronounced differences would be apparent. The present results, then, are not only interim conclusions; they do try to tell the whole story of differences between stages of the implementation process.

Before leaving the question relating to methodological aspects, it is perhaps important to consider some of the limitations of the present investigation which no doubt could have affected its results.

First, the survey design of the investigation necessarily lacks the rigour of the classical experimental design that is necessary for conclusive results. This was particularly evident in the measurement of patterns of influences affecting implementation at two different points in time. The same measurement instruments were not administered repeatedly so that the results could be due to other possible factors. In a balanced experimental design, such problems of instrumentation change would be given due consideration in advance. Nevertheless the formal interview schedule used in the present study can be useful for demonstrating broad influences of the initial and late implementation phases.

It is true, also, that there are countervailing advantages in the methodology of this study as specified in Chapters I and II.

Suffice it to mention here that the design of this study was sufficiently strong to establish the relationships between teacher level of implementation and pupils' perceptions of classroom strategy and pupils' achievement. The samples of teachers and classes were identical, and the same issue (the Project's teaching objectives) was selected for investigation throughout. Aggregating results which were obtained independently but at the same time which stressed a common issue has proved to be a fruitful relevant strategy.

Second, it might be argued that the criteria used to measure the degree and process of implementation were not the appropriate ones. However, both the F.I.A.C. and Evans/Behrman observation schedules are familiar tests which are validated and highly sensitive instruments. The Standardized Test was shown to have both reliability and validity. A good case can equally be made out for the formal interview schedule which was based on the schedule developed by Gross et al (1971). The ranking and rating scales as well as the open-ended items of both Pupils and Teacher Questionnaire yielded more or less satisfactory results, confirming most predictions.

It is true, however, that some of the rating scales were found to be multi-dimensional, that is, they were measuring two factors simultaneously. For instance, Question 10 in the Teacher Questionnaire and Question 1 in the Pupil Questionnaire were measuring both the respondents' knowledge of the Project's strategies and their perceptions of negative/positive pairs of items. It is not surprising, therefore, that some of the findings were difficult to explain, such as the good rating of a pair of items by unqualified teachers or by pupils of unqualified teachers. For these reasons, the observational schedules, the standardized test and the formal

interview schedule will probably be more reliable instruments. However, it is still pertinent to ask whether these are the appropriate criteria that ought to be used for implementation evaluation.

Bearing these limitations of the present study in mind, then, it is hoped that the obtained results may permit a certain degree of generality to the findings, particularly since many of the predictions have been confirmed. For instance, the findings of this study might be generalized to guided inquiry-oriented curricula in other areas outside Social Studies. The inquiry approach advocated by the Social Studies Project bears a strong resemblance to many innovative Science curriculum projects at the secondary level. Although some of the problems experienced in implementing the Mauritian project pertain specifically to the programme itself, there are some which seem to affect most integrated curricula using a modified inquiry approach.

Moreover, although one age-group (the fourteen-year olds) was involved in the present study, it may be concluded that the picture may be the same at other age levels. The use of standardized tests for measuring level of achievement of pupils in the teaching objectives of a new programme, is possible at all levels. The perceptions of pupils were found to be a good way of obtaining information about teachers' classroom strategy and the importance they gave to objectives in the classroom. Although it is doubtful that such information can be derived from younger children, there is no doubt that upper secondary students can reliably provide such information.

RELEVANT FINDINGS OF THE STUDY

These implementation findings will be compared as far as is possible, with those of other researchers whose studies were reviewed in Chapter I. The most educationally relevant findings of this study might be summarized as follows:

1. Teachers differed in their level of implementation of a new curriculum. The characteristics by which the levels of implementation differed have been defined and set out in Chapter IV, and it can be seen that each level involved different patterns of teacher-pupil interactions and variation in the use of the main elements of the new programme. The different levels of use of new curricula among implementers have been empirically recognised by researchers like Hall and Loucks (1977)[3] with their model of seven levels of use (LOU) and by Leithwood and Montgomery (1980)[4] with their Level-by-Dimensions profile.

2. There was evidence that the levels of implementation bore a significant relationship with pupils' perceptions of teacher strategies, and with actual achievement in the main areas of teaching objectives. The exploration of the relationships between teacher level of use of a new programme and student achievement was suggested by Hall and Loucks (1977). Their tentative analysis indicated that the relationship is not a simple linear one, although the authors agreed that this relationship is not necessarily the same across innovations and grade levels. The findings of this present study are in agreement with the conclusions reached by Eggleston, Galton

and Jones (1976)[5] and Galton and Simon (1980)[6]. Those researchers who used systematic classroom observation instruments similar in some ways to the Flanders' Schedule, reported that since teachers differed significantly in their teaching styles, pupils experienced different learning situations and therefore different outcomes.

3. Given the characteristics of the levels of implementation, the status of current implementation in relation to such a definition can be determined. This means determining from the population involved in the implementation of a new curriculum as a whole, the proportion whose practices are most identical to each of the levels of implementation. Thus, in the present study, it was estimated that the group of high implementers who were significantly associated with qualified teachers, constituted less than 30 per cent of the total population of Form III teachers in 1980. This type of information can be used for diagnosis of the weaknesses of the innovative programme and for judging the degree of implementation.

4. In implementation studies of objectives-based innovations, it is highly relevant to consider lists of teaching objectives and their relative acceptance by teachers and pupils, as well as their actual implementation in the classroom. In the current study, the overall rankings of teacher priorities showed compatibility with the objectives of the new programme. However, teachers' awareness of teaching objectives did not play a critical part in teacher-pupil classroom interaction.

There was a gap between teachers' expressed priorities and the implementation of these objectives in the classroom.

5. Pupils' acceptance of teaching objectives was influenced by their perception of the teacher classroom behaviour. Therefore their priorities were not identical with the teacher priorities, but bore a strong relationship to their perceived teacher ranking of these objectives. The interaction of teachers' attitudes to the objectives of a new programme with pupils' appreciation and acceptance of these objectives, have been intensively investigated in studies of B.S.C.S Biology in Israel by Tamir and Jungwirth (1978)[7]. The findings of these studies re-affirm the very high degree of correlation between pupils' ranking and their teacher's image as arrived at by means of the pupils' re-ranking of the objectives and the discrepancies between the teachers' self-perceptions and pupils' rankings.

6. The teachers' priorities and their opinions as to the feasibility of attainment of those objectives were identical. This finding was quite surprising since it was known to the teachers that the feasibility of achieving certain objectives was actually doubtful in the classroom conditions and examination-conscious atmosphere prevailing in the island. This finding was interpreted to be a result of teachers' lack of realism, or perhaps a "strategy" on their part to create a more progressive image of their implementation style. The high level of correlation between priorities and expectations of teachers identified in the present study, appears to disagree with the interpretation of Tamir and Jungwirth (1972)[8].

The latter had reported a substantial disparity between priorities and expectations of teachers in their study of B.S.C.S. biology. The uncertainty of the teachers regarding the achievement of certain objective was offered as a possible explanation of this disparity.

7. The actual implementation of curriculum occurs in the world of teachers as well as that of pupils. The pupils' perceptions of the relative importance of teaching objectives, of their teachers' ranking of objectives and of their classroom strategy, can be quite revealing in implementation studies. Similar conclusions about students being valid observers of classroom teaching or classroom "socio-technology" as Westbury (1980)[9] would put it, were reached by other researchers, for instance, Jones (1981)[10].

8. Qualified and trained teachers were better than the unqualified group in the implementation of the main elements of the new curriculum. They were also more successful in their adaptation of the Project's materials to suit their own local needs. This corresponds to the finding of Berman and Mc Laughlin (1976)[11] who concluded that the success of implementation depended on adequate staff development opportunities. It must not be assumed that teachers already have the expertise to implement the change. Teachers tend to benefit more from long-term in-service training in the use of the new curriculum materials and in the theory of curriculum change than from short courses. At any rate, short-training courses have been condemned for their ineffectiveness by some researchers (for example, Harlen 1978)[12].

9. Teachers were not very keen about curriculum development "at the base", and preferred to contribute to the work of the central institution established to carry out curriculum reforms in the island. They considered that proposals of reform plans from the schools or groups of teachers would be neither politically nor academically capable of rallying broad public support. There was also the fact that teacher-based curriculum development would lead to overwork for the teachers. The present results are in full agreement with the findings obtained from other studies in Third World countries, namely Oran (1976)[13] and Jennings Wray (1981)[14]. The latter concluded in her comparative study of influences and constraints on decision making in the Primary curriculum of West Indies that the role of the teacher as implementer was perceived as a lay one, and that in educational ranks, the curriculum decision maker and the implementer of curriculum decisions seem to be quite separate and apart.

10. This finding about teachers not perceiving their role as curriculum decision-makers contrasts with reviews of curriculum development programmes in Europe and/or U.S.A. (for instance, Bolam (1974)[15], Macdonald and Walker (1976)[16], Stenhouse (1977)[17], Elliott et al (1976)[18])which consider the failure of these programmes to be the responsibility of the centre-periphery model of curriculum development. It is, however, the feeling of many researchers like Tamir (1979)[19], Baumert and Goldschmidt (1980)[20] that the high-quality materials which centre-periphery type projects are well able to produce, will still be required and that the value of these triggers for

teachers to develop their personal variations for particular local needs, should not be underestimated. More recently, Barnes (1981)[21] had advanced the view that some demands of the teacher's role,for example, a committed belief in what one is teaching, are in conflict with a research stance, and argued that Stenhouse's vision of the teacher as his own curriculum researcher can be realised only in a minority of classes.

It is now becoming clear that lessons have been learned from the failure of both centrally controlled and decentralised approaches to curriculum reform, and the balance between central determinations of curriculum guidelines and the provision of areas in which teachers can make curriculum decisions of their own, should be attempted. This is in line with Connelly's (1972)[22] concept of "user-developer" whereby teachers are expected to adapt new curricula to the requirements of their specific situations.

The following statement from Lawton (1979)[23] indicates the need to construct a model for the co-operative control of the curriculum: *"We need to open up the secret garden of the curriculum, but we must also be sure to plan very carefully where the paths should lie".*

11. It follows from Connelly's view of the teacher as "user-developer" that the two main orientations in implementation studies as distinguished by Fullan and Pomfret (1977)[24] namely the fidelity perspective and the mutual adaptation perspective, are not necessarily incompatible. Both

perspectives can be considered simultaneously in an implementation study as the current study tried to do. This review is in full agreement with the arguments expressed by Dalin (1978)[25], Ben Peretz and Lifmann (1979)[26], Eden and Tamir (1979)[27].

12. The main inhibition in bringing about changes at the classroom level, did not appear to reside in the actual development of the materials by a central team, nor in getting teachers to agree to implement the innovation as best they could. Quite apart from teachers' qualifications the main problem seemed to emerge from the socio-political context. The prevailing external examination system, the job market, the time-tabling allocation, the decision not to develop the new curriculum beyond Form III and so forth, forced upon teachers a particular approach to implementing the new curriculum, and made effective implementation on a large scale impossible.

13. The stability of teachers' positive attitudes at all levels of implementation throughout the process of operating the new curriculum, has been demonstrated within the context of the innovation. However, although teachers' attitudes and values tended to remain firm, this did not necessarily reflect their classroom practices nor inhibit their making realistic judgements of curriculum development and change. For instance, a few teachers claimed that the professionally and commercially produced textbooks which had replaced the units of work had killed the adventurous spirit that used to prevail in the classroom. The less finished trial materials products were more effective in encouraging teachers to adapt, extend or

criticise. The remarkable stability of the teachers' attitudes appears to be in full disagreement with the "resistance to change" theory as conceived by early researchers in curriculum studies and as explained by Gross et al (1971)[28] in their work.

14. It was suggested in Chapter I that several factors can act as determinant in the implementation of innovative projects. The findings of this study suggest that

(i) classroom context,

(ii) teachers' knowledge, attitudes and qualifications,

(iii) pupils' knowledge, perceptions and attitudes,

(iv) the characteristics of the innovation

(v) implementation strategies and

(vi) the socio-political context

- all these played critical roles in the implementation of the Social Studies Project in Mauritius. To a large extent these findings are in agreement with the theoretical approach of Fullan and Pomfret (1977) and that of Bherman and Mc Laughlin (1976).

15. Certain problems of initial efforts are likely to continue during the late stage of implementation, especially when they relate to structural changes. On the other hand, different problems may emerge during the course of implementation and these problems are particularly related to the socio-political context. This finding about similarities and differences in the patterns of influences affecting implementation over time,

is an extension of the idea proposed by Harding, Kelly and Nicodemus (1976)[29] in their diffusion research study.

Some Implications of the Present Investigation

It may be helpful to bring out some of the implications of this study which may be relevant both to teachers and to those engaged in teacher education.

The findings obtained from studies using systematic observation (for example, Galton and Simon (1980)) have been shown to have much relevance for the practising teacher. In the present investigation, students for the Post Graduate Certificate in Education who were trained as observers using the Flanders Interaction Analysis categories, were all convinced about the use of systematic observation as an aid to monitoring their own practice and to improving the teaching of the new curriculum. It was shown in Chapter IV that a striking feature of unsuccessful implementation was a relatively high use of category 5 (Teacher Lecture) on F.I.A.C. A teacher who attempts to make less use of this category would find that he or she needs to question other aspects of her implementation strategy. In the same way, individual teachers can be trained to adapt their teaching behaviour to match more closely the interaction patterns as suggested in the new curriculum.

In the training of student-teachers, therefore, it is suggested that further thought be given to the use of interaction analysis in an attempt to improve the level of implementation of innovative programmes. It is clear from this study that pupils of low implementers are disadvantaged educationally, and special attempts might be made to offset this disadvantage. For example, there may be a case for the training of these teachers.

Another relevant area for teacher-training relates to teaching objectives. This is the question of making student-teachers and teachers aware of the discrepancy between their perceived importance of objectives and their actual behaviour, and the effect of this discrepancy on pupils' perceptions of objectives and on actual pupil-achievement. The disparities between teachers' and pupils' priorities may assist teachers in their efforts to improve their teaching instructions. The value of the present conclusions and implications is enhanced by the similar results obtained by Jungwirth and Tamir (1972/73) in their study of the Israel High School Biology Project. The implications of these findings for teacher education are, therefore, patent.

By amalgamating the teachers' and pupils' data concerning the relative importance of objectives, it is possible to identify areas in which development might be encouraged. One area of development relates to the fostering of values and attitudes. To encourage the implementation of these objectives, it is not enough to have appropriate classroom procedures. National policy changes designed to facilitate such implementation, should be carried out. This implies that sufficient considerations should be paid to such objectives in examinations and that better measures of these objectives should be developed.

Teacher training should lay much stress on assessment of pupils' performance in order to ascertain the identification of test-items with teaching objectives. The problem of teachers' continued, concentrated effort towards pupil achievement in the main objective areas will remain crucial.

In conclusion, it must be stressed that the above findings need to be interpreted with all the caution that is implied by the limitations of this investigation. These findings can act not only as facts upon which practical decisions at the levels of classroom and management can be based, but also as pointers for further research in the field of curriculum implementation. In essence, while not adding much to the conceptualization and measurement of implementation, this study does provide an example of the kind of research that has been suggested by others and that can be developed further.

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APPENDICES

APPENDIX I

STATISTICAL APPENDIX

The results of these analyses are described in Chapters III, IV and V. A simple account of the mechanics of these analyses are given below.

1. *A Short Account of Kendall's test of concordance (W)*
   (Source: S. Siegel "Non-parametric statistics for the behavioural sciences", Mc. Graw Hill, pp 229-239, 1956).

The coefficient of concordance (W) expresses the degree of association among R sets of ranking. To obtain W

(1) Let N = the number of entities or objectives to be ranked.

K = the number of respondents assigning ranks.

(2) For each objective, determine Rj, the sum of the ranks assigned to that objective by the K respondents.

(3) Determine the mean of the Rj. Express each Rj as a deviation from that mean. Square these deviations and sum the squares to obtain S.

(4) Use formula $W = \frac{S}{\frac{1}{12} K^2(N^3-N)}$.

(5) To determine whether the observed value of W is significantly different from zero, use formula $X^2 = K(N - 1)W$, d.f = N - 1, if N is larger than 7.

A coefficient of concordance was computed to determine the agreement among 33 Institute-trained Diploma holders in the ranking of 9 objectives. S or the sum of the squares of deviations from the mean of every Rj = 17822; K = 33; N = 9. With this information, W was thus computed:-

$$W = \frac{17822}{\frac{1}{12} \times 33^2(9^3 - 9)}$$

$$= \cdot 272758$$

The agreement among the 33 Diploma holders is expressed by

$$W = \cdot 273$$

The significance of this relation was determined by applying formula

$$\chi^2 = K(N - 1) W$$

$$= 33 \times 8 \times \cdot 273$$

$$= 72 \cdot 072$$

$$d.f = 8$$

Referring to a table of critical values of chi-square, it is found that $\chi^2 \geq 72 \cdot 1$ has probability of occurence under H_0 of $p < \cdot 001$. It can be concluded with considerable assurance that the agreement among the 33 raters is higher than it would be by chance.

Let P = probability that $r \geq \frac{1}{2}N$.

Since r has a binomial distribution with parameters N and P.

$$P = {}^{2k}C_k p^k (1-p)^k + {}^{2k}C_{k+1} p^{k+1} (1-p)^{k-1} + {}^{2k}C_{k+2} p^{k+2} (1-p)^{k-2} + \ldots\ldots\ldots + {}^{2k}C_{2k} p^{2k}$$

where ${}^{2k}C_k$, ${}^{2k}C_{k+1}$, etc. are the usual binomial coefficients.

There are 6 judges, and always at least 2 categories, so that $p \leq \frac{1}{32}$.

The table of values of p is as follows:

No. of categories = n \ No. of judges m	4	5	6	7
2	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$
3	$\frac{1}{27}$	$\frac{1}{81}$	$\frac{1}{243}$	$\frac{1}{729}$
4	$\frac{1}{64}$	$\frac{1}{256}$	$\frac{1}{1024}$	$\frac{1}{4096}$
5	$\frac{1}{125}$	$\frac{1}{625}$	$\frac{1}{3125}$	$\frac{1}{15625}$
6	$\frac{1}{216}$	$\frac{1}{1296}$	$\frac{1}{7776}$	$\frac{1}{46656}$

Thus $p \leq ({}^{2k}C_k + {}^{2k}C_{k+1} + {}^{2k}C_{k+2} + \ldots\ldots\ldots + {}^{2k}C_{2k})\, p^k$.

Since these are k+1 terms inside the brackets and ${}^{2k}C_k$ is the largest term, we get $p \leq {}^{2k}C_k (k+1) p^k$.

Now $${}^{2k}C_k = \frac{2k(2k-1)(2k-2)(2k-3)\ldots\ldots(k+1)}{k(k-1)(k-2)(k-3)\ldots\ldots 1} = \frac{2k(2k-1)}{k^2}$$

$$= {}^{2k-2}C_{k-1} \leq 4\, {}^{2k-2}C_{k-1}$$

$$\therefore {}^{2k}C_k \leq 4 \cdot {}^{2k-2}C_{k-1} \leq 4^2 \cdot {}^{2k-4}C_{k-2} \leq 4^{k-1} \cdot {}^{2}C_1 = 2^{2k-1}$$

$$\therefore P \leq 2^{2k-1}(k+1) \cdot (\tfrac{1}{32})^k \leq 2^{2k-1} \cdot 2k \cdot 2^{-5k} = k \cdot 2^{-3k} \leq 2^{-2k}$$

(since $k \leq 2k$).

∴ Probability $(r \geq \frac{1}{2}N) = P \leq 2^{-N}$, which is very, very small for the values of N which are used.

2. *Testing the validity of categories for classifying open-ended responses*

The binomial test was chosen because the data are in two discrete categories (agreement/disagreement with the number of statements classified). A special formula of this test devised by Dr. Mc. Lean of the University of Liverpool, School of Education for analysing these data is briefly as follows:-

Let* r = No. of statements on whose classification all judges agree.

p = Probability that all judges agree(on how any single stagement should be classified).

N = No. of different statements which are being classified.

* *Note:* The given values of r are so high that one can dispense with the No. of statements on whose classification there is at most one disagreement between judges.

For a null hypothesis, suppose that statements were assigned to categories at random.

The test is briefly as follows:-

Compare r with $\frac{1}{2}N$.

If $r \geqslant \frac{1}{2}N$, the null hypothesis can be very safely rejected.

Mathematical justification of this test

For convenience, take N to be even (A similar justification can be given when N is odd).

Thus $\frac{1}{2}N$ is an integer, k, say.

3. *Cluster Analysis*

(Source:- B.M.D.P., 261-642 1977 (August).

Cluster Analysis of Variables

The PIM programme of BMDP forms clusters of variables based on a measure of association or similarity between the variables. The measure of similarity used in this analysis is the absolute value of the correlation. The criterion used to combine variables into clusters is based on the maximum similarity (minimum single linkage) between any two variables that are not in the same cluster. At each step the two clusters with the maximum similarity are combined. The stepping terminates when only one cluster remains;

(1) The procedure measure is the absolute value of correlation. The correlations are recoded to a similarity measure between 0 and 100, where a correlation of 0.0 is recoded to zero (minimum similarity). The table below lists the recoded values 0, 5, 10 ..... 100, and the value of the correlation for which the recoded value is obtained.

THE VALUES IN THIS TREE HAVE BEEN SCALED 0 TO 100
ACCORDING TO THE FOLLOWING TABLE

VALUE ABOVE	CORRELATION	VALUE ABOVE	CORRELATION
0	0.000	50	0.500
5	0.050	55	0.550
10	0.100	60	0.600
15	0.150	65	0.650
20	0.200	70	0.700
25	0.250	75	0.750
30	0.300	80	0.800
35	0.350	85	0.850
40	0.400	90	0.900
45	0.450	95	0.950

(2) The number of cases read. PIM uses complete cases only in all computations.

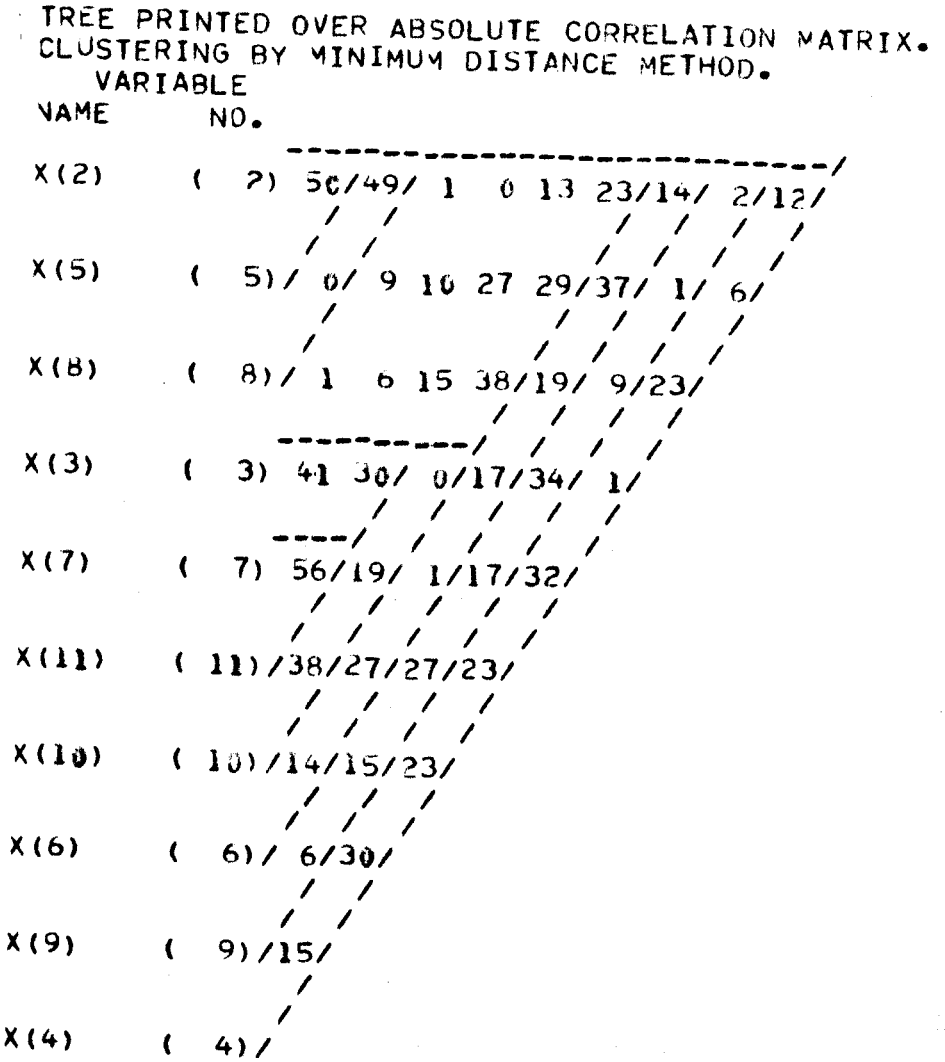
(3) The mean and standard deviation for each variable are printed.

NAME	VARIABLE NO.	MEAN	STANDARD DEVIATION
X(2)	2	4.517	0.574
X(3)	3	3.517	1.153
X(4)	4	2.828	1.284
X(5)	5	4.345	0.721
X(6)	6	3.931	0.884
X(7)	7	4.138	0.743
X(8)	8	4.310	0.541
X(9)	9	3.966	1.117
X(10)	10	3.931	0.799
X(11)	11	4.034	1.180

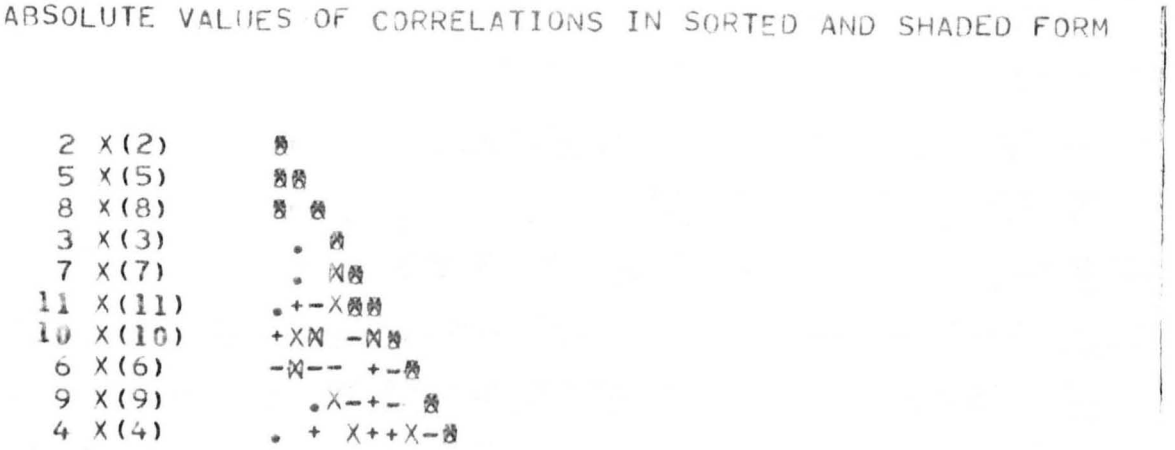
(4) A summary table of the clusters formed. The similarity between two clusters at the time they are joined, is read from this table. The cluster determined by the pair of lines intersecting the two variables is listed beside the first variable in this table. The other boundary of the cluster is the second variable. The number of items is the number of variables in the cluster. The final column in this table is the value of the similarity at the step when the cluster is found.

NAME	VARIABLE NO.	OTHER BOUNDARY OF CLUSTER	NUMBER OF ITEMS IN CLUSTER	DISTANCE OR SIMILARITY WHEN CLUSTER FORMED
X(2)	2	4	10	32.55
X(5)	5	2	2	50.25
X(8)	8	2	3	49.89
X(3)	3	10	4	38.17
X(7)	7	11	2	56.50
X(11)	11	3	3	41.98
X(10)	10	2	7	38.16
X(6)	6	2	8	37.51
X(9)	9	2	9	34.59
X(4)	4	2	10	32.55

(5) A tree showing the clusters formed at each step. The horizontal and diagonal lines determine the clusters. The numbers superimposed on the tree diagram or dendrogram are the recoded measures of similarity between each pair of variables as shown in (1). The first number in each line is the measure of similarity of the variable to the left of the line with the one immediately below it, the second is with the second variable below it, etc.



(6) The correlation matrix can also be printed in shaded form; the variables are sorted into the order specified in the tree diagram, and the correlations matrix is then printed with codes replacing the correlations.



APPENDIX II

Tables

General Note

Throughout this appendix, the level of significance of findings will be indicated thus:

* indicates 5% significance level (P = 0·05)

* * indicates 1% significance level (P = 0·01)

* * * indicates 0·1% significance level (P = 0·001).

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Table I(a):- Ranking of objectives by male and female teachers.

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
Males	1	12	29	5	1	0	17	11	2	9
	2	8	9	2	9	7	17	16	7	11
	3	7	14	9	9	7	11	10	12	7
	4	8	8	7	8	11	8	10	14	12
	5	9	11	13	9	12	8	9	6	9
	6	7	1	16	10	13	2	13	11	13
	7	6	9	18	11	10	7	5	9	11
	8	10	5	9	18	11	8	6	10	9
	9	19	1	7	11	14	8	6	15	5
Females	1	11	22	3	2	2	23	14	3	11
	2	13	8	7	5	3	13	15	19	7
	3	6	10	6	8	5	10	15	16	14
	4	8	15	4	7	10	15	12	9	10
	5	5	9	11	10	11	9	14	11	9
	6	4	13	18	11	14	5	11	5	9
	7	6	5	16	11	17	8	5	14	8
	8	14	3	9	23	21	5	3	5	7
	9	23	3	15	14	7	3	1	9	15
CHI-SQUARE		4.23	16.94	7.96	2.53	11.20	7.85	7.31	15.24	9.97
DF		8	8	8	8	8	8	8	8	8
Inference		n.s	*	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table I(b):- Ranking of objectives by teachers of < 5 years and > 5 years of experience.

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
< 5-Years	1	14	27	8	2	0	19	14	3	14
	2	12	9	6	10	4	20	20	12	8
	3	8	15	8	12	8	12	11	16	11
	4	6	14	7	8	12	11	14	12	17
	5	10	13	14	13	9	8	12	11	10
	6	7	7	19	14	15	6	14	8	11
	7	8	9	18	10	14	11	8	13	10
	8	14	4	9	19	23	9	4	11	8
	9	22	1	12	14	15	6	4	15	12
> 5-Years	1	9	24	0	1	2	21	11	2	6
	2	9	8	3	4	6	10	11	14	10
	3	5	9	7	5	4	9	14	12	10
	4	10	9	4	7	9	12	8	11	5
	5	4	7	10	6	14	9	11	6	8
	6	4	7	15	7	12	1	10	8	11
	7	4	5	16	12	13	4	2	10	9
	8	10	4	9	22	9	4	5	4	8
	9	20	3	10	11	6	5	3	9	8
CHI-SQUARE		4.96	3.81	7.33	7.59	12.28	8.90	5.82	4.15	7.41
DF		8	8	8	8	8	8	8	8	8
Inference		n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table I(c):- Ranking of objectives by unqualified teachers and Diploma-holders

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
UNQUALIFIED	1	19	32	4	3	1	27	13	3	12
	2	18	11	8	7	5	19	20	14	11
	3	11	15	10	13	9	12	14	15	14
	4	11	16	9	12	13	10	16	14	12
	5	10	16	15	12	13	11	14	9	13
	6	10	8	21	11	18	3	18	12	12
	7	6	8	19	9	18	9	7	19	18
	8	18	4	14	26	18	11	5	10	7
	9	10	3	13	19	18	11	7	18	14
DIPLOMA-HOLDERS	1	2	11	1	0	0	7	9	1	2
	2	0	3	0	4	3	9	3	6	5
	3	1	3	2	1	1	6	4	9	6
	4	3	4	1	1	4	5	3	6	6
	5	1	0	6	4	7	3	5	4	3
	6	0	5	7	4	5	1	5	3	3
	7	4	4	8	7	7	2	0	0	1
	8	3	3	2	10	5	0	4	1	5
	9	19	1	5	2	1	0	0	3	2
CHI-SQUARE		45·88	9.48	6.07	12.46	7.68	10·28	12.68	12.45	9.93
DF		8	8	8	8	8	8	8	8	8
Inference		***	n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table I(d):- Ranking of objectives by Non-Graduates and Degree-Holders

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
NON-GRADUATES including DIPLOMA-HOLDERS	1	21	43	5	3	1	34	22	4	14
	2	18	14	8	11	8	28	23	20	16
	3	12	18	12	14	10	18	18	24	20
	4	14	20	10	13	17	15	19	20	18
	5	11	16	21	16	20	14	19	13	16
	6	10	13	28	15	23	4	23	15	15
	7	10	12	27	16	25	11	7	19	19
	8	21	7	16	36	23	11	9	11	12
	9	29	4	18	21	19	11	7	21	16
DEGREE-HOLDERS	1	2	8	3	0	1	6	3	1	6
	2	3	3	1	3	2	2	8	6	2
	3	1	6	3	3	2	3	7	4	1
	4	2	3	1	2	4	8	3	3	4
	5	3	4	3	3	3	3	4	4	2
	6	1	1	6	6	4	3	1	1	7
	7	2	2	7	6	2	4	3	4	0
	8	3	1	2	5	9	2	0	4	4
	9	13	0	4	4	2	0	0	3	4
CHI-SQUARE		9.06	3.55	4.29	4.91	7.55	13.88	12.01	4.29	13.67
DF		8	8	8	8	8	8	8	8	8
Inference		n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table I(e):- Ranking of objectives by professionally untrained and trained teachers

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
Untrained teachers	1	20	37	7	3	2	32	16	4	16
	2	20	14	9	10	7	20	25	18	13
NO DIPLOMA	3	12	20	12	16	11	14	18	18	15
	4	12	19	9	14	16	15	19	17	15
	5	13	20	18	14	14	14	18	11	14
	6	11	9	26	15	20	6	19	12	18
	7	8	9	23	14	20	13	9	22	18
	8	20	4	15	30	26	12	5	14	10
	9	20	3	17	21	19	11	7	21	17
Trained teachers	1	3	14	1	0	0	8	9	1	4
	2	1	3	0	4	3	10	6	8	5
DIPLOMA/PGCE	3	1	4	3	1	1	7	7	10	6
	4	4	4	2	1	5	8	3	6	7
	5	1	0	6	5	9	3	5	6	4
	6	0	5	8	6	7	1	5	4	4
	7	4	5	11	8	7	2	1	1	1
	8	4	4	3	11	6	1	4	1	6
	9	22	1	5	4	2	0	0	3	3
CHI-SQUARE		34.28	13.69	5.63	10.06	8.49	11.58	9.60	13.50	8.02
DF		8	8	8	8	8	8	8	8	8
Inference		***	n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table I(f):- Ranking of objectives by teachers teaching Social Studies only and teachers teaching Social Studies and other subjects.

		Objectives								
	RANK	A	B	C	D	E	F	G	H	I
Teachers	1	16	48	6	3	2	31	21	5	18
teaching	2	17	16	7	13	10	24	26	21	16
SOCIAL STUDIES	3	12	21	14	16	9	18	21	24	15
only	4	15	19	8	15	19	21	18	18	17
	5	12	17	21	16	19	14	20	13	17
	6	8	10	30	18	23	7	20	15	19
	7	10	10	29	18	25	15	8	20	15
	8	20	5	14	34	28	12	9	12	16
	9	40	3	20	19	14	8	6	23	17
Teachers	1	7	3	2	0	0	9	4	0	2
teaching	2	4	1	2	1	0	6	5	5	2
SOCIAL STUDIES	3	1	3	1	1	3	3	4	4	6
and OTHER	4	1	4	3	0	2	2	4	5	5
SUBJECTS	5	2	3	3	3	4	3	3	4	1
	6	3	4	4	3	4	0	4	1	3
	7	2	4	5	4	2	0	2	3	4
	8	4	3	4	7	4	1	0	3	0
	9	2	1	2	6	7	3	1	1	3
CHI-SQUARE		11,04	12.28	4.89	7.12	10.65	8.77	2.10	6.68	9.44
DF		8	8	8	8	8	8	8	8	8
Inference		n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Table 2(a) Cross-tabulations: Teacher qualifications by attitudes to Project, controlling for sex, School Type, School Environment, and Teaching Experience.

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * * *

VAR07 QUALIFICATION BY VAR12

CONTROLLING FOR..

VAR01	SEX	VALUE..	1	MALE
VAR02	SCHOOL TYPE	VALUE..	3	PRIVATE
VAR03	SCHOOL ENVIRONMENT	VALUE..	4	URBAN
VAR05	TEACHING EXP	VALUE..	2	MORE THAN 5 YEARS

* PAGE 1 OF 1

VAR07 \ VAR12 (COUNT / ROW PCT / COL PCT / TOT PCT)	1	2	3	4	5	ROW TOTAL
1 UNQUALIFIED	1	2	3	3	2	11
	9.1	18.2	27.3	27.3	18.2	84.6
	100.0	100.0	100.0	75.0	66.7	
	7.7	15.4	23.1	23.1	15.4	
2 DIPLOMA	0	0	0	0	1	1
	0	0	0	0	100.0	7.7
	0	0	0	0	33.3	
	0	0	0	0	7.7	
3 DEGREE	0	0	0	1	0	1
	0	0	0	100.0	0	7.7
	0	0	0	25.0	0	
	0	0	0	7.7	0	
COLUMN TOTAL	1	2	3	4	3	13
	7.7	15.4	23.1	30.8	23.1	100.0

RAW CHI SQUARE = 5.90909 WITH 8 DEGREES OF FREEDOM. SIGNIFICANCE = .6574
CRAMER'S V = .47673
CONTINGENCY COEFFICIENT = .55902
LAMBDA (ASYMMETRIC) = 0 WITH VAR07 DEPENDENT. = .11111 WITH VAR12 DEPENDENT.
LAMBDA (SYMMETRIC) = .09091
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .40310 WITH VAR07 DEPENDENT. = .14170 WITH VAR12 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .20969
KENDALL'S TAU B = .31036. SIGNIFICANCE = .1129
KENDALL'S TAU C = .21302. SIGNIFICANCE = .1129
CONDITIONAL GAMMA = .66667
SOMERS'S D (ASYMMETRIC) = .18462 WITH VAR07 DEPENDENT. = .52174 WITH VAR12 DEPENDENT.
SOMERS'S D (SYMMETRIC) = .27273
ETA = .38576 WITH VAR07 DEPENDENT.
ETA = .39818 WITH VAR12 DEPENDENT.
PEARSON'S R = .28735 SIGNIFICANCE = .1706

Table 2 (b) Cross-tabulations: Teacher qualifications by attitude to Project philosophy

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F *
VAR07 QUALIFICATION BY VAR12
* PAGE 1 OF 1

VAR07	COUNT / ROW PCT / COL PCT / TOT PCT	VAR12 1	2	3	4	5	ROW TOTAL
1 UNQUALIFIED	COUNT	11	38	15	37	13	114
	ROW PCT	9.6	33.3	13.2	32.5	11.4	64.8
	COL PCT	84.6	86.4	88.2	52.1	41.9	
	TOT PCT	6.3	21.6	8.5	21.0	7.4	
2 DIPLOMA	COUNT	0	1	0	18	14	33
	ROW PCT	0	3.0	0	54.5	42.4	18.8
	COL PCT	0	2.3	0	25.4	45.2	
	TOT PCT	0	.6	0	10.2	8.0	
3 DEGREE	COUNT	2	5	2	16	4	29
	ROW PCT	6.9	17.2	6.9	55.2	13.8	16.5
	COL PCT	15.4	11.4	11.8	22.5	12.9	
	TOT PCT	1.1	2.8	1.1	9.1	2.3	
COLUMN TOTAL		13	44	17	71	31	176
		7.4	25.0	9.7	40.3	17.6	100.0

RAW CHI SQUARE = 37.59277 WITH 8 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .32680
CONTINGENCY COEFFICIENT = .41953
LAMBDA (ASYMMETRIC) = .01613 WITH VAR07 DEPENDENT. = .00952 WITH VAR12 DEPENDENT.
LAMBDA (SYMMETRIC) = .01198
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .13881 WITH VAR07 DEPENDENT. = .08620 WITH VAR12 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .10636
KENDALL'S TAU B = .27315. SIGNIFICANCE = .0000
KENDALL'S TAU C = .25181. SIGNIFICANCE = .0000
GAMMA = .44038
SOMERS'S D (ASYMMETRIC) = .23029 WITH VAR07 DEPENDENT. = .32399 WITH VAR12 DEPENDENT.
SOMERS'S D (SYMMETRIC) = .26922

Table 3(a):- Sub-item x Sub-item of Implementation Factors.

Sub-items	χ^2 Results			
	n.s	*	**	***
1 x 2 ---------x 13	1 x 4,x9,x 10,x11, x 12, x 13	1 x 3, x 7, x 8		1 x 2, x 5
2 x 1 -------- x 13	2 x 5			2 x 1, x 3 x 4, x 7, x 8, x 9, x 10, x 11, x 12,x 13
3 x 1 -------- x 13	3 x 8, x 9	3 x 1, x 4, x 5, x 13	1 x 10,x 11	3 x 2, x 7, x 12
4 x 1 -------- x 13	4 x 1 x 7, x 9, x 10, x 11,x 12, x 13	4 x 3, x 8		4 x 2, x 5
5 x 1 -------- x 13	5 x 2	5 x 3	5 x 11, x 18 x 13	5 x 1, x 4, x 7, x 9, x 10, x 12
7 x 1 -------- x 13	7 x 4, x 10, x 11, x 12, x 13	7 x 1	7 x 9	7 x 2, x 3, x 5, x 8
8 x 1 -------- x 13	8 x 3, x 9	8 x 1, x 4, x 11, x 13	8 x 5, x 10	8 x 2, x 7, x 12
9 x 1 -------- x 13	9 x 1, x 3, x 4, x 8, x 11, x 13	9 x 10, x 12	9 x 7	9 x 2, x 5
10 x 1 -------- x 13	10 x 1, x 4, x 7, x 11, x 12, x 13	10 x 9	10 x 3, x 8	10 x 2, x 5

Table 3(a) continued

Sub-items	n.s	χ^2 Results *	**	***
11 x 1 -------- x 13	11 x 1, x 4, x 7, x 9, x 10, x 12 x 13	11 x 8	11 x 3, x 5	11 x 2
12 x 1 -------- x 13	12 x 1, x 4, x 7, x 10, x 11, x 13	12 x 9		12 x 2, x 3, x 5, x 8
13 x 1 -------- x 13	13 x 1, x 4, x 7, x 9, x 10, x 11, x 12	13 x 3 x 8	13 x 5	13 x 2

Table 3(b):- Overall frequency Count-Implication Factors

Sub-items	FACILITATING 5	4	3	INHIBITING 2	1
1	107	55	10	4	1
2	40	80	29	10	18
3	77	67	9	9	15
4	103	49	8	9	8
5	47	78	32	16	4
6		6	33	53	85
7	117	37	11	7	5
8	86	70	9	9	3
9	80	57	20	10	10
10	110	45	16	6	
11	112	52	3	10	
12	110	41	18	5	3
13	110	52	7	6	2

Table 3 (c) Cross-tabulations: Teacher qualifications by attitude to implementation factors, controlling for sex, school type, school environment and teaching experience

```
* * * * * * * * * * * * * * * * *  C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * * *
   VAR07      QUALIFICATION                                               BY  VAR29
CONTROLLING FOR..
   VAR01      SEX                                                         VALUE..      1   MALE
   VAR02      SCHOOL TYPE                                                 VALUE..      3   PRIVATE
   VAR03      SCHOOL ENVIRONMENT                                          VALUE..      4
   VAR05      TEACHING EXP                                                VALUE..      2   MORE THAN 5 YEARS
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  PAGE  1 OF  1
```

VAR07	VAR29: COUNT / ROW PCT / COL PCT / TOT PCT	2	4	5	ROW TOTAL
1 UNQUALIFIED	COUNT	1	2	8	11
	ROW PCT	9.1	18.2	72.7	84.6
	COL PCT	100.0	66.7	88.9	
	TOT PCT	7.7	15.4	61.5	
2 DIPLOMA	COUNT	0	0	1	1
	ROW PCT	0	0	100.0	7.7
	COL PCT	0	0	11.1	
	TOT PCT	0	0	7.7	
3 DEGREE	COUNT	0	1	0	1
	ROW PCT	0	100.0	0	7.7
	COL PCT	0	33.3	0	
	TOT PCT	0	7.7	0	
COLUMN TOTAL		1	3	9	13
		7.7	23.1	69.2	100.0

```
RAW CHI SQUARE =     3.93939 WITH     4 DEGREES OF FREEDOM.  SIGNIFICANCE =    .4143
CRAMER'S V =    .38925
CONTINGENCY COEFFICIENT =    .48224
LAMBDA (ASYMMETRIC) =          0 WITH VAR07    DEPENDENT.          =    .25000 WITH VAR29    DEPENDENT.
LAMBDA (SYMMETRIC) =    .16667
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =    .27534 WITH VAR07    DEPENDENT.        =   .18674 WITH VAR29    DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) =    .22255
KENDALL'S TAU B =  -.16695.    SIGNIFICANCE =    .2724
KENDALL'S TAU C =  -.08876.    SIGNIFICANCE =    .2724
CONDITIONAL GAMMA =  -.38462
SOMERS'S D (ASYMMETRIC) =  -.12821 WITH VAR07    DEPENDENT.          =  -.21739 WITH VAR29    DEPENDENT.
SOMERS'S D (SYMMETRIC) =  -.16129
ETA =    .41786 WITH VAR07    DEPENDENT.
ETA =    .23355 WITH VAR29    DEPENDENT.
PEARSON'S R = -.09759  SIGNIFICANCE =    .3756
```

Table 3 (d) Cross-tabulations: Teacher qualifications by attitude to implementation factors.

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
VAR07 QUALIFICATION BY VAR29
* PAGE 1 OF 1

VAR07	VAR29: COUNT / ROW PCT / COL PCT / TOT PCT	1	2	3	4	5	ROW TOTAL
1 UNQUALIFIED	COUNT	5	5	13	44	47	114
	ROW PCT	4.4	4.4	11.4	38.6	41.2	65.1
	COL PCT	100.0	100.0	81.3	65.7	57.3	
	TOT PCT	2.9	2.9	7.4	25.1	26.9	
2 DIPLOMA	COUNT	0	0	1	10	21	32
	ROW PCT	0	0	3.1	31.3	65.6	18.3
	COL PCT	0	0	6.3	14.9	25.6	
	TOT PCT	0	0	.6	5.7	12.0	
3 DEGREE	COUNT	0	0	2	13	14	29
	ROW PCT	0	0	6.9	44.8	48.3	16.6
	COL PCT	0	0	12.5	19.4	17.1	
	TOT PCT	0	0	1.1	7.4	8.0	
COLUMN TOTAL		5	5	16	67	82	175
		2.9	2.9	9.1	38.3	46.9	100.0

RAW CHI SQUARE = 11.34530 WITH 8 DEGREES OF FREEDOM. SIGNIFICANCE = .1829
CRAMER'S V = .18004
CONTINGENCY COEFFICIENT = .24675
LAMBDA (ASYMMETRIC) = 0 WITH VAR07 DEPENDENT. = 0 WITH VAR29 DEPENDENT.
LAMBDA (SYMMETRIC) = 0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .04746 WITH VAR07 DEPENDENT. = .03681 WITH VAR29 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .04146
KENDALL'S TAU B = .15926. SIGNIFICANCE = .0105
KENDALL'S TAU C = .13538. SIGNIFICANCE = .0105
GAMMA = .29034
SOMERS'S D (ASYMMETRIC) = .14467 WITH VAR07 DEPENDENT. = .17534 WITH VAR29 DEPENDENT.
SOMERS'S D (SYMMETRIC) = .15853
ETA = .19583 WITH VAR07 DEPENDENT.
ETA = .23637 WITH VAR29 DEPENDENT.
PEARSON'S R = .18345 SIGNIFICANCE = .0075

NUMBER OF MISSING OBSERVATIONS = 2

Table 4 (a) Histograms of Male and Female teachers involved in classroom observation

```
FILE   NONAME    (CREATION DATE = 13/11/80)

VARIABLE   V2

     CODE
           I
   M 1.00  ********************************************************************************* (    37)  46.3 PCT
           I
           I
           I
   F 2.00  ********************************************************************************************** (    43)  53.7 PCT
           I
           I
           I.........I.........I.........I.........I.........I.........I.........I.........I.........I.........I
           0         5        10        15        20        25        30        35        40        45        50
           FREQUENCY
```

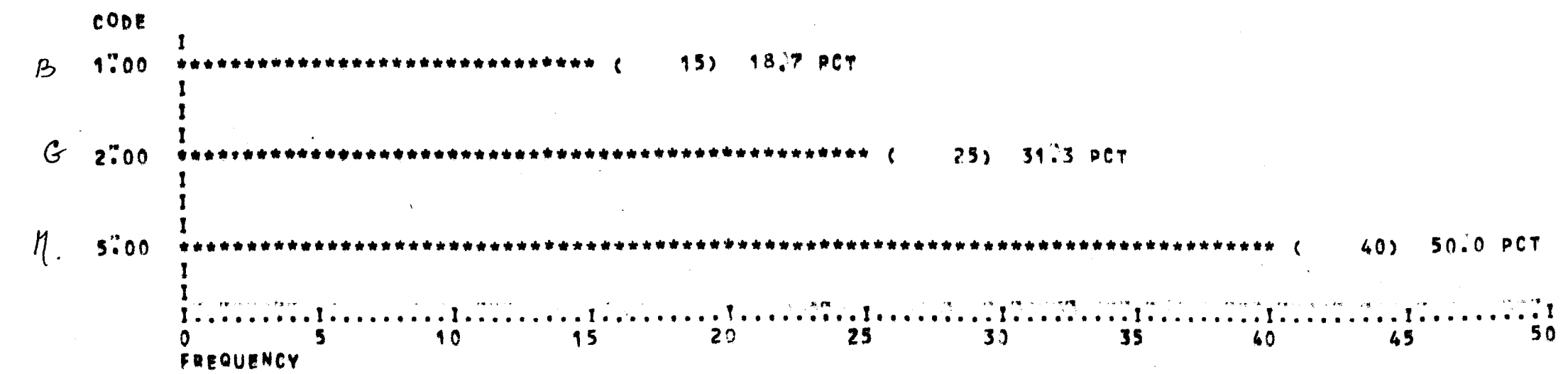
Table 4 (b) Histograms of Rural/Urban Schools involved in Classroom Observation

```
FILE   NONAME   (CREATION DATE = 13/11/80)

VARIABLE   V3

      CODE
           I
      1.00 ********************************************************************************** (    44)  55.0 PCT
           I
           I
           I
      2.00 ****************************************************************************** (    36)  45.0 PCT
           I
           I
           I....+....I....+....I....+....I....+....I....+....I....+....I....+....I....+....I....+....I....+....I
           0         5         10        15        20        25        30        35        40        45        50
           FREQUENCY

STATISTICS..

KURTOSIS        -1.960          SKEWNESS        0.205          RANGE          1.000

MINIMUM          1.000          MAXIMUM         2.000

VALID   OBSERVATIONS =       80
MISSING OBSERVATIONS =        0
```

Table 4 (c) Histograms of Sex Composition of classes involved in Classroom Observation

FILE NONAME (CREATION DATE = 13/11/80)

VARIABLE V4



STATISTICS:

KURTOSIS	-1.823	SKEWNESS	-0.124	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000		

VALID OBSERVATIONS = 80
MISSING OBSERVATIONS = 0

Table 4 (d) Histograms of qualifications of teachers involved in classroom observation

```
FILE   NONAME   (CREATION DATE = 13/11/80)

VARIABLE   V5

      CODE
           I
     1.00  ************************************************************************ (    36)  45.0 PCT
           I
           I
           I
     2.00  ************************************************** (    28)  35.0 PCT
           I
           I
           I
     3.00  ********************************** (    16)  20.0 PCT
           I
           I
           I.....I.....I.....I.....I.....I.....I.....I.....I.....I.....I.....I
           0     5     10    15    20    25    30    35    40    45    50
           FREQUENCY

STATISTICS..

KURTOSIS        =1.169          SKEWNESS        0.467           RANGE          2.000

MINIMUM          1.000          MAXIMUM         3.000

VALID   OBSERVATIONS =       80
MISSING OBSERVATIONS =        0
```

Table 4 (e) Histograms of years of experience of teachers involved in classroom observation

```
FILE   NONAME   (CREATION DATE = 13/11/80)

VARIABLE   V6

      CODE
           I
     1.00  ************************************************************************************************ (     48)
60.0 PCT
           I
           I
           I
     2.00  ********************************************************************* (     32)  40.0 PCT
           I
           I
           I.....I.....I.....I.....I.....I.....I.....I.....I.....I.....I.....I
           0     5     10    15    20    25    30    35    40    45    50
           FREQUENCY

STATISTICS:

KURTOSIS        =1.833              SKEWNESS        0.416              RANGE          1.000

MINIMUM          1.000              MAXIMUM         2.000

VALID   OBSERVATIONS =        80
MISSING OBSERVATIONS =         0
```

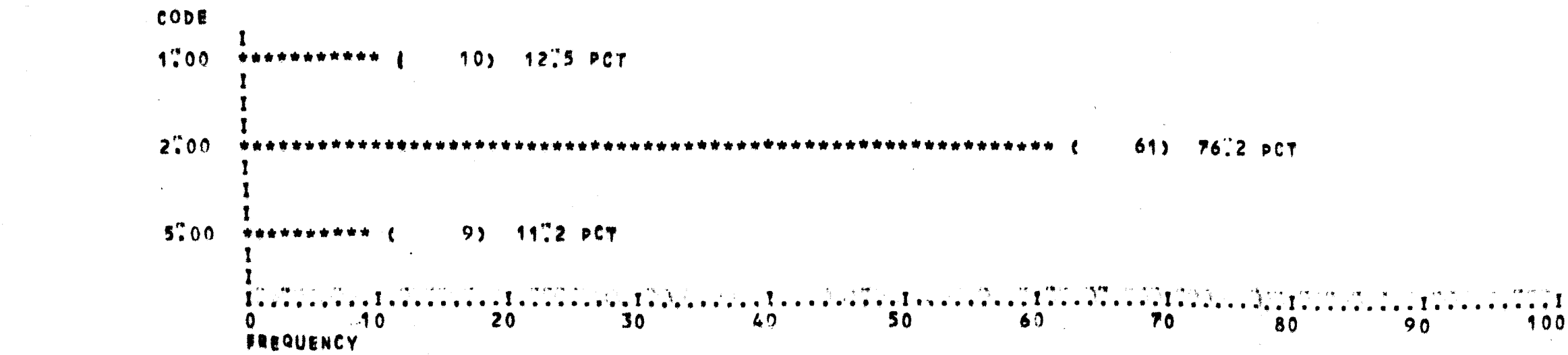
Table 4 (f) Histograms of types of schools involved in classroom observation

TOTAL	80	100.0	100.0	100.0

VEDID1 13/11/80 PAGE 8

FILE NONAME (CREATION DATE = 13/11/80)

VARIABLE V7



STATISTICS:

KURTOSIS	2.920	SKEWNESS	1.970	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000		

VALID OBSERVATIONS = 80
MISSING OBSERVATIONS = 0

Table 5 (a) Cross-tabulation: Pupil Initiation on F.I.A.C. X Teacher Sub-Groups

* C R O S S T A B U L A T I O N O F *
V82 BY V3
* PAGE 1 OF 1

V82	COUNT / ROW PCT / COL PCT / TOT PCT	V3 1.00	V3 2.00	ROW TOTAL
0.00	COUNT	30	32	62
	ROW PCT	48.4	51.6	77.5
	COL PCT	68.2	88.9	
	TOT PCT	37.5	40.0	
1.00	COUNT	4	2	6
	ROW PCT	66.7	33.3	7.5
	COL PCT	9.1	5.6	
	TOT PCT	5.0	2.5	
2.00	COUNT	2	0	2
	ROW PCT	100.0	0.0	2.5
	COL PCT	4.5	0.0	
	TOT PCT	2.5	0.0	
3.00	COUNT	4	2	6
	ROW PCT	66.7	33.3	7.5
	COL PCT	9.1	5.6	
	TOT PCT	5.0	2.5	
4.00	COUNT	3	0	3
	ROW PCT	100.0	0.0	3.7
	COL PCT	6.8	0.0	
	TOT PCT	3.7	0.0	
10.00	COUNT	1	0	1
	ROW PCT	100.0	0.0	1.2
	COL PCT	2.3	0.0	
	TOT PCT	1.2	0.0	
COLUMN TOTAL		44 55.0	36 45.0	80 100.0

CHI SQUARE = 6.66449 WITH 5 DEGREES OF FREEDOM SIGNIFICANCE = 0.2468
CRAMER'S V = 0.28863
CONTINGENCY COEFFICIENT = 0.27731

Table 5 (b) Cross-tabulation: Teacher qualifications X sub-item on the Evans/Behrman Schedule

* C R O S S T A B U L A T I O N O F *
V5 BY V23
* PAGE 1 OF 1

V5	COUNT / ROW PCT / COL PCT / TOT PCT	V23 0.00	V23 1.00	V23 2.00	V23 3.00	ROW TOTAL
1.00		8	16	8	6	36
		22.2	38.9	22.2	16.7	45.0
		66.7	82.4	38.1	20.0	
		10.0	17.5	10.0	7.5	
2.00		2	1	8	17	28
		7.1	3.6	28.6	60.7	35.0
		16.7	5.9	38.1	56.7	
		2.5	1.2	10.0	21.2	
3.00		2	2	5	7	16
		12.5	12.5	31.3	43.7	20.0
		16.7	11.8	23.8	23.3	
		2.5	2.5	6.2	8.7	
COLUMN TOTAL		12	17	21	30	80
		15.0	21.2	26.2	37.5	100.0

CHI SQUARE = 21.22585 WITH 6 DEGREES OF FREEDOM SIGNIFICANCE = 0.0017
CRAMER'S V = 0.36423
CONTINGENCY COEFFICIENT = 0.45792

Table 5 (c) Cross-tabulation: Sub-item X sub-item on the Evans/Behrman Schedule

* C R O S S T A B U L A T I O N O F *
V51 BY V27
* PAGE 1 OF 1

V51 \ V27	0.00	1.00	2.00	3.00	ROW TOTAL
0.00	2	3	0	4	9
	22.2	33.3	0.0	44.4	11.2
	50.0	16.7	0.0	8.7	
	2.5	3.7	0.0	5.0	
1.00	1	13	7	8	29
	3.4	44.8	24.1	27.6	36.2
	25.0	72.2	58.3	17.4	
	1.2	16.2	8.7	10.0	
2.00	1	2	3	20	26
	3.8	7.7	11.5	76.9	32.5
	25.0	11.1	25.0	43.5	
	1.2	2.5	3.7	25.0	
3.00	0	0	2	14	16
	0.0	0.0	12.5	87.5	20.0
	0.0	0.0	16.7	30.4	
	0.0	0.0	2.5	17.5	
COLUMN TOTAL	4	18	12	46	80
	5.0	22.5	15.0	57.5	100.0

CHI SQUARE = 31.60516 WITH 9 DEGREES OF FREEDOM SIGNIFICANCE = 0.0002
CRAMER'S V = 0.36289
CONTINGENCY COEFFICIENT = 0.53215

Table 6(a):- Factor Loadings on Rotated Principal Components of all Evans/Behrman & F.I.A.C Measures (except Evans/Behrman Item 12, first & third ratings)

ROTATED FACTOR MATRIX

VARIABLE		1	2	3	4	5	6	7	8	9
	Item 1									
Evans/	1									
Behrman	2				63					
Schedule	3	- 39								
	Item 2									
	4	- 54			30					
	5	- 50					-39			
	6	- 32			27					
	Item 3									
	7	- 34			57					
	8				36					
	9				62					
	Item 4									
	10	- 35								
	11	- 36								
	12									
	Item 5									
	13	- 46								
	14						33			
	15	- 55								
	Item 6									
	16	- 35			37					
	17						34			
	18				41					
	Item 7									
	19	- 39			58					
	20									
	21				78					
	Item 8									
	22					45				
	23	-31	-35			31				
	24									
	Item 9									
	25					85				
	26									
	27									

Table 6(a) continued

ROTATED FACTOR MATRIX

VARIABLE	1	2	3	4	5	6	7	8	9
Item 10									
28					84				
29		-68							
30		-35							
Item 11									
31									
32									
33									
Item 12									
34						-76			
VARIABLES									
F.I.A.C									
SCHEDULE I									
35	65								
36		-71							
37	-83								
38	88								
39	-85								
40									
41			72						
SCHEDULE II									
42	67		-57						
43		-69							
44	-89								
45	87								
46	-83								
47		-78							
48			75			-46			
SCHEDULE III									
49	72								
50		-59							
51	-78								
52	80								
53	-69		-38						
54		-65							
55			86						

Table 7(a) - Frequencies of pupils involved in Pupil Questionnaire (Pupils X Sex).

Category Label (Sex)	Code	Absolute Freq	Relative Freq (PCT)	Adjusted Freq (PCT)	Cum Freq (PCT)
Boys	1.	865	45.4	45.4	45.4
Girls	2.	1042	54.6	54.6	100.0
	Total	1907	100.0	100.0	

Mode 2.000 Minimum 1.000 Maximum 2.000

Table 7(b) - Frequencies of school type involved in Pupil Questionnaire (Pupils X School Type).

Category Label (School Type)	Code	Absolute Freq	Relative Freq (PCT)	Adjusted Freq (PCT)	Cum Freq (PCT)
State	1.	205	10.7	10.7	10.7
JSS	2.	383	20.1	20.1	30.8
Private	3.	1319	69.2	69.2	100.0
	Total	1907	100.0	100.0	

Mode 3.000 Minimum 1.000 Maximum 3.000

Table 7(c) - Frequencies of Rural/Urban Schools involved in Pupil Questionnaire (Pupils X School Environment).

	Code	Absolute Freq	Relative Freq (PCT(	Adjusted Freq (PCT)	Cum Freq (PCT)
Category Label					
(School Environment)	1.	864	45.3	45.3	45.3
	2.	1043	54.7	54.7	100.0
	Total	1907	100.0	100.0	

Mode 2.000 **Minimum** 1.000 **Maximum** 2.000

Table 7(d) - Frequencies of class sex composition involved in Pupil Questionnaire (Pupil X Class Sex Composition).

	Code	Absolute Freq	Relative Freq (PCT)	Adjusted Freq (PCT)	Cum Freq (PCT)
CATEGORY LABEL *(Class Sex Composition)*					
Male	1.	448	23.5	23.5	23.5
Female	2.	682	35.8	35.8	59.3
Mixed	3.	777	40.7	40.7	100.0
	Total	1907	100.0	100.0	

Mode 3.000 **Minimum** 1.000 **Maximum** 3.00

Table *7(e) - Frequencies of Male/Female teachers involved in Pupil Questionnaire (Pupils X Teacher Sex).*

Category Label	Code	Absolute Freq	Relative Freq (PCT)	Adjusted Freq (PCT)	Cum Freq (PCT)
Maletea	1.	977	51.2	51.2	51.2
Femtea	2.	930	48.8	48.8	100.0
	Total	1907	100.0	100.0	

Mode	1.000	Minimum	1.000	Maximum	2.000

Table *7(f) - Frequencies of Teachers (Pupils X Teacher Qualifications)*

Category Label	Code	Absolute Freq	Relative Freq (PCT)	Adjusted Freq (PCT)	Cum Freq (PCT)
Unqual	1.	685	35.9	35.9	35.9
Diploma	2.	886	46.5	46.5	82.4
Grad	3.	336	17.6	17.6	100.0
	Total	1907	100.0	100.0	

Mode	2.000	Minimum	1.000	Maximum	3.000

Table 8 (a) Cross-tabulations: Agreement between positive and negative items by teacher qualification and class sex composition

```
* * * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N   O F * * * * * * * * * * * * * * * * * * * *
    VAR16     ONE8                                                BY  VAR18     ONE10
CONTROLLING FOR..
    VAR08     TQUAL                                               VALUE..     2   DIPLOMA
    VAR05     CLASS                                               VALUE..     2   FEMALE
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * PAGE  1 OF  1
```

VAR16	COUNT / ROW PCT / COL PCT / TOT PCT	VAR18 1	VAR18 2	ROW TOTAL
1		60	62	122
		49.2	50.8	54.7
		53.6	55.9	
		26.9	27.8	
2		52	49	101
		51.5	48.5	45.3
		46.4	44.1	
		23.3	22.0	
COLUMN TOTAL		112	111	223
		50.2	49.8	100.0

```
CORRECTED CHI SQUARE =      .04332 WITH 1 DEGREE OF FREEDOM.  SIGNIFICANCE =    .8351
PHI =     .02295
CONTINGENCY COEFFICIENT =    .02294
LAMBDA (ASYMMETRIC) =          0 WITH VAR16    DEPENDENT.          =    .01802 WITH VAR18    DEPENDENT.
LAMBDA (SYMMETRIC) =    .00943
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =    .00038 WITH VAR16    DEPENDENT.          =    .00038 WITH VAR18    DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) =    .00038
KENDALL'S TAU B =   -.02295.     SIGNIFICANCE =    .3662
KENDALL'S TAU C =   -.02284.     SIGNIFICANCE =    .3662
CONDITIONAL GAMMA =   -.04607
SOMERS'S D (ASYMMETRIC) =   -.02284 WITH VAR16    DEPENDENT.          =   -.02305 WITH VAR18    DEPENDENT.
SOMERS'S D (SYMMETRIC) =   -.02295
ETA =    .02295 WITH VAR16    DEPENDENT.
ETA =    .02295 WITH VAR18    DEPENDENT.
PEARSON'S R = -.02295  SIGNIFICANCE =    .3666
```

Table 8 (b) Cross-tabulations: Agreement between positive and negative items by teacher qualification and class sex composition

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *

VAR14 ONE6 BY VAR21 ONE13

CONTROLLING FOR..

VAR08 TQUAL VALUE.. 3 GRAD

VAR05 CLASS VALUE.. 2 FEMALE

* PAGE 1 OF 1

VAR14	COUNT / ROW PCT / COL PCT / TOT PCT	VAR21: 1	VAR21: 2	ROW TOTAL
1		6	160	166
		3.6	96.4	93.3
		66.7	94.7	
		3.4	89.9	
2		3	9	12
		25.0	75.0	6.7
		33.3	5.3	
		1.7	5.1	
COLUMN TOTAL		9	169	178
		5.1	94.9	100.0

CORRECTED CHI SQUARE = 6.67208 WITH 1 DEGREE OF FREEDOM. SIGNIFICANCE = .0098
PHI = .24474
CONTINGENCY COEFFICIENT = .23772
LAMBDA (ASYMMETRIC) = 0 WITH VAR14 DEPENDENT. = 0 WITH VAR21 DEPENDENT.
LAMBDA (SYMMETRIC) = 0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .06985 WITH VAR14 DEPENDENT. = .08616 WITH VAR21 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .07716
KENDALL'S TAU B = -.24474. SIGNIFICANCE = .0006
KENDALL'S TAU C = -.05378. SIGNIFICANCE = .0006
CONDITIONAL GAMMA = -.79775
SOMERS'S D (ASYMMETRIC) = -.28008 WITH VAR14 DEPENDENT. = -.21386 WITH VAR21 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.24253
ETA = .24474 WITH VAR14 DEPENDENT.
ETA = .24474 WITH VAR21 DEPENDENT.
PEARSON'S R = -.24474 SIGNIFICANCE = .0005

Table 8 (c) Cross-tabulations: Agreement between positive and negative items by teacher qualification and class sex composition

```
* * * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N   O F * * * * * * * * * * * * * * * * * * * *
    VAR16     ONE8                                                BY  VAR18     ONE10
CONTROLLING FOR..
    VAR08     TQUAL                                               VALUE..     1   UNQUAL
    VAR05     CLASS                                               VALUE..     1   MALE
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * PAGE  1 OF  1
```

	COUNT / ROW PCT / COL PCT / TOT PCT	VAR18 = 1	VAR18 = 2	ROW TOTAL
VAR16	1	39	9	48
		81.3	18.8	25.9
		23.5	47.4	
		21.1	4.9	
	2	127	10	137
		92.7	7.3	74.1
		76.5	52.6	
		68.6	5.4	
	COLUMN TOTAL	166	19	185
		89.7	10.3	100.0

```
CORRECTED CHI SQUARE =     3.89129 WITH 1 DEGREE OF FREEDOM.  SIGNIFICANCE =    .0485
PHI =      .16534
CONTINGENCY COEFFICIENT =    .16313
LAMBDA (ASYMMETRIC) =          0 WITH VAR16    DEPENDENT.          =         0 WITH VAR18    DEPENDENT.
LAMBDA (SYMMETRIC) =         0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =    .02141 WITH VAR16    DEPENDENT.          =    .03704 WITH VAR18    DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) =    .02714
KENDALL'S TAU B =  -.16534.     SIGNIFICANCE =    .0125
KENDALL'S TAU C =  -.08801.     SIGNIFICANCE =    .0125
CONDITIONAL GAMMA =  -.49119
SOMERS'S D (ASYMMETRIC) =  -.23874 WITH VAR16    DEPENDENT.          =  -.11451 WITH VAR18    DEPENDENT.
SOMERS'S D (SYMMETRIC) =  -.15478
ETA =    .16534 WITH VAR16    DEPENDENT.
ETA =    .16534 WITH VAR18    DEPENDENT.
PEARSON'S R = -.16534  SIGNIFICANCE =    .0123
```

Table 8(d) Pupil Responses by Categories of Implementers (Question 1)

		Low Implementers	Medium Implementers	High Implementers	Total	χ^2 value with $d.f = 2$ & inference
Item 1	True	422	686	543	1651	20·76
	False	40	98	118	256	***
Item 2	True	342	571	387	1300	43.36
	False	120	213	274	607	***
Item 3	True	268	540	482	1290	28.55
	False	194	244	179	617	***
Item 4	True	260	580	455	1295	42·20
	False	202	204	206	612	***
Item 5	True	375	712	604	1691	34·30
	False	87	72	57	216	***
Item 6	True	336	586	525	1447	7·60
	False	126	198	136	460	*(2%)
Item 7	True	251	363	345	959	8.96
	False	211	421	316	948	**

Table 8(d) Pupil Responses by Categories of Implementers (Question 1) continued....

		Low Implementers	Medium Implementers	High Implementers	Total	χ^2 value with $d.f = 2$ & inference
Item 8	True	173	462	227	802	47.52
	False	289	382	434	1105	***
Item 9	True	219	456	352	1027	13.69
	False	243	328	309	880	***
Item 10	True	347	561	407	1315	27.47
	False	115	223	254	592	***
Item 11	True	339	564	442	1315	6.81
	False	123	220	219	562	*
Item 12	True	277	497	389	1163	3.38
	False	185	287	272	744	n.s
Item 13	True	183	209	126	518	58.21
	False	279	575	535	1389	***
Item 14	True	348	695	593	1636	55.10
	False	114	89	68	271	***

Table 8e[1]: Pupils' Priorities X Categories of Implementers (Objective 1)

	Low Implementers	*Medium Implementers*	*High Implementers*
RANK 1	90	192	149
2	106	154	122
3	68	122	90
4	35	23	19
5	67	160	115
6	41	57	60
7	23	26	50
8	6	11	17
9	26	39	39
	462	784	661

$\chi^2 = 50.04$; $d.f = 16$; ***

Table 8e[2]: Pupils' Priorities X Categories of Implementers (Objective 2)

	Low Implementers	*Medium Implementers*	*High Implementers*
RANK 1	88	152	130
2	85	146	88
3	81	134	91
4	55	56	53
5	62	111	105
6	43	78	66
7	16	47	63
8	3	16	19
9	29	44	46

$\chi^2 = 43.66$; $d.f = 16$; ***

Table 8e[3]: Pupils' Priorities X Categories of Implementers (Objective 3)

		Low Implementers	*Medium Implementers*	*High Implementers*
Rank	1	64	106	77
	2	63	133	108
	3	68	125	93
	4	55	73	44
	5	52	110	102
	6	57	70	75
	7	42	61	56
	8	24	40	43
	9	37	72	63

χ^2 = 22.48 ; *d.f* = 16; n.s

Table 8e[4]: Pupils' Priorities X Categories of Implementers (Objective 4)

		Low Implementers	*Medium Implementers*	*High Implementers*
Rank	0	0	1	0
	1	49	103	90
	2	49	106	103
	3	66	98	75
	4	48	68	53
	5	61	102	89
	6	68	108	68
	7	45	80	65
	8	33	52	56
	9	43	66	52

χ^2 = 19.67 ; *d.f* = 18; n.s.

Table 8e[5]: Pupils' Priorities X Categories of Implementers (Objective 5)

		Low	*Medium*	*High*
Rank	1	65	67	78
	2	39	86	85
	3	56	82	76
	4	54	104	64
	5	55	69	74
	6	40	88	71
	7	59	97	78
	8	36	92	57
	9	58	99	76

$\chi^2 = 29.77$; $d.f = 16$; * (2%).

Table 8e[6]: Pupils' Priorities X Categories of Implementers . (Objective 6)

		Low	*Medium*	*High*
Rank	1	32	71	63
	2	44	61	62
	3	34	70	80
	4	58	69	66
	5	49	64	65
	6	58	135	88
	7	69	119	82
	8	45	96	66
	9	73	99	89

$\chi^2 = 29.47$; $d.f = 16$; * (2%).

Table 8e[7]: Pupils' Priorities X Categories of Implementers (Objective 7)

		Low	*Medium*	*High*
Rank	1	32	50	28
	2	33	49	46
	3	34	69	75
	4	47	90	63
	5	42	73	57
	6	63	163	98
	7	68	106	103
	8	86	134	102
	9	57	109	89

$\chi^2 = 16.75$; $d.f = 18$; n.s.

Table 8e[8]: Pupils' Priorities X Categories of Implementers (Objective 8)

		Low	*Medium*	*High*
Rank	1	20	19	27
	2	23	30	28
	3	29	52	62
	4	37	122	92
	5	47	45	40
	6	45	89	83
	7	83	133	96
	8	111	169	119
	9	67	124	114

$\chi^2 = 44.19$; $d.f = 18$; ***

Table 8e[9]: Pupils' Priorities X Categories of Implementers (Objective 9)

		Low	*Medium*	*High*
Rank	1	21	32	24
	2	23	16	13
	3	27	33	20
	4	72	178	205
	5	32	47	19
	6	44	54	47
	7	54	119	70
	8	117	177	184
	9	72	128	79

$\chi^2 = 74.01$; *d.f* = 16; ***

Table 8f[1]: Perceived Teacher Ranking X Categories of Implementers (1)

		Low	*Medium*	*High*
Rank	1	141	245	192
	2	70	147	128
	3	54	82	72
	4	40	37	37
	5	56	124	86
	6	45	39	50
	7	23	48	37
	8	3	13	15
	9	30	49	44

$\chi^2 = 30.23$; *d.f* = 16; *

Table 8f²: Perceived Teacher Ranking X Categories of Implementers (2)

		Low	*Medium*	*High*
Rank	1	66	132	102
	2	94	153	125
	3	85	170	128
	4	61	59	55
	5	47	94	83
	6	39	70	60
	7	29	46	53
	8	18	11	16
	9	23	49	39

$\chi^2 = 27.04$; $d.f = 16$; *

Table 8f³: Perceived Teacher Ranking X Categories of Implementers (3)

		Low	*Medium*	*High*
Rank	1	54	92	67
	2	66	122	98
	3	70	140	94
	4	59	102	65
	5	69	116	111
	6	44	65	84
	7	36	68	58
	8	23	25	24
	9	41	53	60

$\chi^2 = 23.37$; $d.f = 18$; n.s.

Table 8f[4]: Perceived Teacher Ranking X Categories of Implementers(4)

		Low	*Medium*	*High*
Rank	1	60	77	82
	2	56	114	68
	3	63	91	89
	4	54	105	79
	5	67	110	91
	6	57	105	83
	7	34	74	66
	8	23	47	35
	9	48	60	68

$\chi^2 = 19.07$; *d.f* = 18; n.s.

Table 8f[5]: Perceived Teacher Ranking X Categories of Implementers(5)

		Low	*Medium*	*High*
Rank	1	49	62	77
	2	47	92	83
	3	56	81	83
	4	49	97	86
	5	62	103	91
	6	59	100	74
	7	60	100	72
	8	34	67	36
	9	46	82	59

$\chi^2 = 17.86$; *d.f* ; n.s.

Table 8f[6]*: Perceived Teacher Ranking X Categories of Implementers (6)*

		Low	*Medium*	*High*
Rank	1	37	71	59
	2	40	63	66
	3	52	73	78
	4	64	92	90
	5	48	72	72
	6	66	138	90
	7	59	116	80
	8	43	62	51
	9	53	95	75

$\chi^2 = 17.12$; $d.f = 18$; n.s.

Table 8f[7]*: Perceived Teacher Ranking X Categories of Implementers (7)*

		Low	*Medium*	*High*
Rank	1	32	66	41
	2	44	40	55
	3	39	89	59
	4	49	98	97
	5	63	75	69
	6	66	110	106
	7	67	133	116
	8	48	92	51
	9	54	79	67

$\chi^2 = 35.61$; $d.f = 18$; **

Table 8f[8]: Perceived Teacher Ranking X Categories of Implementers(8)

		Low	*Medium*	*High*
Rank	1	23	31	39
	2	30	38	31
	3	38	51	54
	4	53	108	104
	5	40	62	52
	6	58	105	89
	7	78	121	104
	8	85	141	101
	9	57	125	87

$\chi^2 = 19.26$; *d.f* = 18; n.s.

Table 8f[9]: Perceived Teacher Ranking X Categories of Implementers (9)

		Low	*Medium*	*High*
Rank	1	4	10	7
	2	10	11	4
	3	4	9	8
	4	33	86	47
	5	14	30	6
	6	31	49	23
	7	71	72	74
	8	186	325	334
	9	109	191	158

$\chi^2 = 53.06$; *d.f* = 18; ***

Table 8g[1]: Teacher Priorities X Categories of Implementers (1)

		Low	*Medium*	*High*
Rank	1	73	119	38
	2	186	81	144
	3	0	33	0
	4	44	0	0
	5	0	0	0
	6	70	114	250
	7	20	250	114
	8	33	0	34
	9	36	187	72

$\chi^2 = 675.99$; $d.f = 14$; ***

Table 8g[2]: Teacher Priorities X Categories of Implementers (2)

		Low	*Medium*	*High*
Rank	1	19	33	0
	2	90	116	144
	3	29	34	0
	4	38	68	38
	5	41	0	37
	6	26	285	110
	7	143	123	75
	8	0	103	179
	9	76	22	78

$\chi^2 = 543.38$; $d.f = 16$; ***

Table 8g[3]: Teacher Priorities X Categories of Implementers (3)

		Low	*Medium*	*High*
Rank	1	41	39	103
	2	82	125	185
	3	76	115	39
	4	64	0	33
	5	29	81	0
	6	112	184	35
	7	0	35	109
	8	32	167	116
	9	26	38	41

$\chi^2 = 516.82$; *d.f* = 16; ***

Table 8g[4]: Teacher Priorities X Categories of Implementers (4)

		Low	*Medium*	*High*
Rank	1	51	0	39
	2	0	109	44
	3	77	37	0
	4	82	154	0
	5	36	172	74
	6	44	131	220
	7	94	68	69
	8	40	74	72
	9	38	39	143

$\chi^2 = 667.59$; *d.f* = 16; ***

Table 8g[5]: Teacher Priorities X Categories of Implementers (5)

		Low	*Medium*	*High*
Rank	1	59	39	44
	2	72	178	0
	3	0	146	151
	4	29	37	103
	5	76	111	111
	6	31	33	37
	7	60	65	68
	8	38	76	108
	9	97	99	39

$\chi^2 = 401.78$; $d.f = 16$; ***

Table 8g[6]: Teacher Priorities X Categories of Implementers (6)

		Low	*Medium*	*High*
Rank	1	38	41	0
	2	32	114	75
	3	64	220	113
	4	36	47	74
	5	85	111	141
	6	20	0	0
	7	81	72	109
	8	77	0	75
	9	29	179	74

$\chi^2 = 381.63$; $d.f = 16$; ***

Table 8g[7]: Teacher Priorities X Categories of Implementers (7)

		Low	*Medium*	*High*
Rank	1	65	36	149
	2	0	61	38
	3	72	184	107
	4	0	190	187
	5	20	38	77
	6	19	37	0
	7	64	119	0
	8	117	76	0
	9	105	43	103

$\chi^2 = 660.77$; $d.f = 16$; ***

Table 8g[8]: Teacher Priorities X Categories of Implementers (8)

		Low	*Medium*	*High*
Rank	1	44	248	34
	2	0	0	31
	3	26	36	40
	4	169	38	226
	5	142	236	146
	6	62	0	0
	7	0	52	73
	8	19	142	0
	9	0	32	111

$\chi^2 = 946.45$; $d.f = 16$; ***

Table 8g[9]: Teacher Priorities X Categories of Implementers (9)

		Low	*Medium*	*High*
Rank	1	72	229	254
	2	0	0	0
	3	118	0	211
	4	0	250	0
	5	33	35	75
	6	78	0	0
	7	0	0	44
	8	106	125	77
	9	55	145	0

$\chi^2 = 1132.27$; $d.f = 14$; ***

Table 9(a): Class mean scores X Level of Implementers - Cluster 1 Objective.

Class	Level of Implementers		
	Low	Medium	High
1	60.0	44.6	70.0
2	31.4	44.5	67.2
3.	40.0	33.6	62.4
4	40.8	38.0	50.1
5	41.4	36.3	66.1
6	47.2	42.5	60.9
7	40.2	37.5	59.3
8	45.0	38.2	53.6
9	42.0	34.4	63.6
10	36.4	52.0	48.7
11	47.0	37.6	60.0
12	-	55.1	60.0
13	-	51.7	60.0
14	-	38.0	63.3
15	-	38.3	-
16	-	51.0	-
17	-	55.4	-
18	-	41.4	-
19	-	70.7	-

Table 9(b) Class mean scores X Level of Implementers - Cluster 2 Objective

Class	Level of Implementers		
	Low	Medium	High
1	61.43	51.43	71.43
2	34.64	56.07	73.21
3	42.50	38.87	69.29
4	45.36	41.43	57.50
5	45.36	47.50	73.21
6	55.36	58.21	63.21
7	45.0	46.07	60.71
8	52.86	46.43	63.93
9	47.86	45.00	60.36
10	40.71	57.14	53.57
11	52.86	47.14	67.86
12	-	53.21	68.21
13	-	51.43	66.79
14	-	47.86	66.07
15	-	46.79	-
16	-	52.14	-
17	-	52.14	-
18	-	49.64	-
19	-	74.29	-

Table 9(c) Class mean scores X Level of Implementers - Cluster 3 objective

Class	Level of Implementers		
	Low	Medium	High
1	48•89	36•94	63•33
2	26•94	41•67	55•83
3	31.67	27.77	55.28
4	28•33	31•11	40•00
5	37.22	33.06	57.22
6	37•78	42.50	55.56
7	32.78	33.06	53.33
8	40.00	31.11	50.56
9	36.94	30.55	55.28
10	26.67	45.56	42•77
11	37.78	33.33	56•11
12	-	45•56	58•61
13	-	39•44	50•00
14	-	32.78	51•39
15	-	34•72	-
16	-	42.50	-
17	-	42.78	-
18	-	33.89	-
19	-	59•17	-

Table 9(d) Class mean scores X Level of Implementers - Cluster 4 objective

Class	Level of Implementers		
	Low	Medium	High
1	62.83	53.91	78·91
2	40.87	46·74	75·00
3	34·13	38·70	68.04
4	50.00	45·65	56.09
5	46.09	34·78	72·39
6	57.39	58·91	67·83
7	42.78	40.87	64.13
8	44.35	53.69	60.65
9	50.87	39.13	72.61
10	44.78	53.70	51·52
11	57·39	41.96	60.43
12	-	66.57	67·17
13	-	58.26	64.13
14	-	47·83	67.39
15	-	46·74	-
16	-	58.04	-
17	-	61.52	-
18	-	47·17	-
19	-	78.26	-

Table 9(e): Analysis of Variance : Level of Implementation X Cluster 1 Objective

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	80534.4848	40267.2424	243.2322	.0000
Within Groups	1614	267198.6618	165.5506		
Total	1616	347733.1466			

Group	Count	Mean	standard Deviation	Standard Error	Minimum	Maximum
Group 1	380	41.6145	12.4922	.6408	9.0000	77.0000
Group 2	739	45.3478	14.2024	.5224	11.0000	82.0000
Group 3	498	59.0311	10.9133	.4890	26.5000	86.5000
Total	1617	48.6846			9.0000	86.5000

Ungrouped Data	14.6691	.3648
Fixed Effects Model	12.8666	.3200
Random Effects Model	9.1446	5.2796

Table 9(f): Analysis of Variance: Level of Implementation X Cluster 2 Objective

Source	D.F	Sum of Squares	Mean Squares	F Ratio	F. Prob.
Between Groups	2	5457.5710	2728.7855	155.9962	.0000
Within Groups	1614	28233.1232	17.4926		
Total	1616	33690.6942			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
Group 1	380	13.3974	4.2142	.2162	2.0000	24.0000
Group 2	739	14.5129	4.5310	.1667	3.0000	28.0000
Group 3	498	17.9980	3.5747	.1602	5.0000	26.0000
Total	1617	15.3241			2.000	28.0000

Ungrouped Data	4.5660	.1135
Fixed Effects Model	4.1824	.1040
Random Effects Model	2.3802	1.3742

Random Effects Model - Estimate of Between Component Variance 5.2312

Table 9(g): Analysis of Variance: Level of Implementation X Cluster 3 Objective

Source	D.F.	Sum of Squares	Mean Squares	F. Ratio	F. Prob.
Between Groups	2	10130.9114	5065.4557	227.1491	.0000
Within Groups	1614	35992.4229	22.3001		
Total	1616	46123.3343			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
Group 1	380	12.5329	4.5949	.2357	2.0000	26.0000
Group 2	739	13.7267	4.9620	.1825	0.0000	29.0000
Group 3	498	18.6466	4.4450	.1992	5.0000	31.0000
Total	1617	14.9613			0.0000	31.0000

Ungrouped Data	5.3424	.1329
Fixed Effects Model	4.7223	.1174
Random Effects Model	3.2433	1.8725

Random Effects Model - Estimate of Between Component Variance 9.7303

Table 9(h): Analysis of Variance: Level of Implementers X Cluster 4 Objective

Source	D.F	Sum of Squares	Mean Squares	F. Ratio	F. Prob.
Between Groups	2	15869.0730	7.934.5365	157.4704	.0000
Within Groups	1614	81325.3943	50.3875		
Total	1616	97194.4672			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
Group 1	380	21.9776	7.5009	.3848	0.0000	40.0000
Group 2	739	23.7943	7.7235	.2841	0.0000	42.0000
Group 3	498	29.7837	5.6699	.2541	13.5000	44.5000
Total	1617	25.2120			0.0000	44.5000

Ungrouped Data	7.7553	.1929
Fixed Effects Model	7.0984	.1765
Random Effects Model	4.0588	2.3434

Random Effects Model - Estimate of Between Component Variance 15.2117

APPENDIX III

SPECIMEN RESEARCH INSTRUMENTS

A variety of formal data-collection procedures was employed to obtain evidence during this study. The instruments which were used and which are discussed in Chapters 2, 3, 4, 5, 6 and 7 are presented below:-

1. The self-administered teacher questionnaire.

1. (a) Letter asking for formal permission to conduct a survey among teachers.

1. (b) Reminder to teacher.

2. Student's questionnaire.

3. (a) Letter asking for permission to observe teachers at work.

3. (b) Flanders' interaction analysis (F.I.A.C.).

4. The Evans/Behrman Observation Schedule (modified version).

5. The Social Studies Standardized test.

5. (a) Specification Grid.

6. The Teacher Interview Schedule.

I. *THE SELF-ADMINISTERED TEACHER QUESTIONNAIRE (SOCIAL STUDIES)*

This questionnaire has been designed for use by the Form III Social Studies teachers in schools. The object is to obtain a frank expression of teachers' opinions and attitudes on the Social Studies curriculum in schools, together with relevant background information. I would be very grateful if you could complete the questionnaire as soon as is practicable and return it to me:

Miss D. VENKATASAMY,
HEAD OF DEPARTMENT OF HUMANITIES AND SOCIAL STUDIES,
MAURITIUS INSTITUTE OF EDUCATION,
REDUIT.

All replies are strictly confidential. Do not write your name on the questionnaire.

SECTION I

YOUR BACKGROUND CHARACTERISTICS

Please *circle in red* the appropriate code.

1. Male .. .. M

   Female .. .. F

2. Type of school you are teaching in:
   (Circle no more than two).

   State School 1

   Junior Secondary School 2

   Private School 3

   Urban School 4

   Rural school 5

3. Size of school you are teaching in:

Over 1 000 Students 1

Between 1 000 - 500 Students 2

Under 500 Students 3

4. Years of teaching experience

Under 1 year 1

1 - 5 years 2

5 - 10 years 3

10 - 15 years 4

Over 15 years 5

5. Length of service in your present school.

Under 1 year 1

1 - 3 years 2

4 - 6 years 3

7 - 12 years 4

Over 12 years 5

6. Your qualifications.

School Certificate or G.C.E. (O) 1

Higher School Certificate or G.C.E. (A) 2

H.S.C. or G.C.E. (A) plus Teacher's Diploma 3

Degree or degree equivalent 4

Degree plus P.G.C.E. or B.Ed. 5

Higher degree 6

7. In what area(s) did you obtain your main qualification at college or university? (Circle no more than two)

Geography	1
History	2
Economics	3
Sociology	4
Political Science	5
Other subjects not mentioned	6

8. Is your teaching time

allocated to Social Studies only	1
divided between Social Studies and Geography	2
divided between Social Studies and History	3
divided between Social Studies and Economics	4
divided between Social Studies and Sociology	5
divided between Social Studies and other subjects not mentioned here?	6

SECTION II

YOUR FEELINGS ABOUT THE SOCIAL STUDIES CURRICULUM

Check the relevant response in accordance with given indications.

9. Here is a list of Social Studies teaching objectives:

A. The ability to recall basic facts about man and society.

B. The ability to develop ideas, concepts and generalisations.

C. The ability to find information through various sources.

D. The ability to interpret maps, pictures, charts, cartoons, graphs and other visuals.

E. The ability to work and participate within small groups.

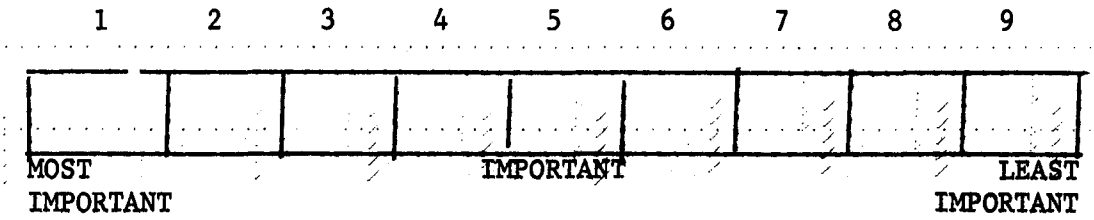
F. The ability to develop empathy or tolerance for cultures and societies different from one's own.

G. The ability to be objective and open-minded in discussion and in evaluating information.

H. The ability to think about and clarify one's personal beliefs and values.

I. The ability to accept responsibility in a changing society.

Rank these 9 objectives in order of their relative importance to you. In the spaces provided below, starting from the left at number 1, fill in the letter of the objective which you regard as the most important. For example, if you think that the most important one is "the ability to work and participate in small groups", you put E under number 1. Then choose the one that you consider the most important among the other eight and put its letter under 2, and so on.



10. Please *circle in red* the number next to each statement which best indicates your preferences.

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Some overall set of objectives is necessary before teachers start planning their work.	1	2	3	4	5
2. Social Studies should be taught as a body of factual information	1	2	3	4	5

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
3. The object of Social Studies is to teach the traditional History and Geography in a new way.	1	2	3	4	5
4. It is more important for Social Studies concepts, skills and attitudes than to to learn facts about particular places and people.	1	2	3	4	5
5. Social Studies involves a change in the teacher's role in the classroom	1	2	3	4	5
6. Students' opinions should be sought about on value issues in the Social Studies classroom.	1	2	3	4	5
7. Social Studies is intended to be an integrated course drawing ideas and concepts from a variety of disciplines.	1	2	3	4	5
8. It is not important for teachers to identify certain objectives before they tackle the Social Studies themes	1	2	3	4	5
9. Teachers do not have to modify their previous practices to conform to the requirements of the Social Studies Project.	1	2	3	4	5
10. There should be no class discussion of value issues in the Social Studies classroom.	1	2	3	4	5

11. Rate the influence of the following factors affecting the actual use of the Social Studies Project curriculum materials and ideas in schools. *Circle in red* the appropriate number.

	Strongly Facilitate	Moderately Facilitate	No Effect	Moderately Limit	Strongly Limit
1. In-service courses/ workshop sessions.	5	4	3	2	1
2. Classroom visits by Institute of Education staff.	5	4	3	2	1
3. Commitment of teachers to the Project.	5	4	3	2	1
4. The use of the Project materials.	5	4	3	2	1
5. Provision of the Form III Examination related to the Project.	5	4	3	2	1
6. The discontinuity of the Social Studies Syllabus beyond Form III	5	4	3	2	1
7. Teacher's Continuation of his/her formal studies at the Institute of Education.	5	4	3	2	1
8. The objectives of the Project	5	4	3	2	1
9. Support from Principal and other colleagues at school.	5	4	3	2	1

	Strongly Facilitate	Moderately Facilitate	No Effect	Moderately Limit	Strongly Limit
10. Establishment of regional centres for workshops.	5	4	3	2	1
11. Adequate periods for working out the Social Studies programme.	5	4	3	2	1
12. Stability of staff at school.	5	4	3	2	1
13. Planning of the Project by the Institute of Education	5	4	3	2	1

You are doing well so far. Take a rest for some minutes before you complete the questionnaire.

12. Which of the objectives listed in Question 9 would you expect your Social Studies students to achieve to the highest degree? Why?

13. (a) According to you which one of the following possible outcomes (results) of the teaching of Social Studies is most important?

(1) Preparation for future studies in separate subjects.

(11) A knowledge of the basic facts about the Mauritian society.

(111) An ability to handle value issues in the classroom.

(1V) The development of skills of inquiry in the students.

(b) Why do you give this answer?

14. Complete the following sentences:

(i) Compared with the traditional subjects, Social Studies is

(ii) I think that the Social Studies materials as presented by the Mauritius Institute of Education are

(iii) If teachers were involved in the development of the Social Studies Project

(iv) The things I find most difficult in the teaching of Social Studies are

(v) The things I find most difficult in the teaching of Social Studies are

. . . . . .

. . . . . .

. . . . . .

(vi) My feelings about the discontinuity of Social Studies beyond form III are

. . . . . .

. . . . . .

. . . . . .

(vii) If I am asked about the possible fate of the Social Studies Project, I would say that

. . . . . .

. . . . . .

. . . . . .

THANK YOU FOR YOUR CO-OPERATION

MAURITIUS INSTITUTE OF EDUCATION

1 (a) SOCIAL STUDIES SECTION

Réduit,
14th January 1980

The Principal,

.....

.....

Sir/Madam,

Miss D. Venkatasamy, Head of Humanities and Social Studies Department, is conducting a national survey of teachers participating in the actual implementation of the Social Studies Project. The Purpose of the survey is to take stock of the Social Studies Project in schools and to measure its problems and progress.

You can help by getting every teacher involved in Social Studies teaching to complete the questionnaire which is hereby attached. Completion of the questionnaire will take a small amount of your teachers' time, but their responses are of great importance to the Mauritius Institute of Education Social Studies programme.

Teachers do not have to write their name on the questionnaire and the information will be treated as confidential. All completed questionnaires are to be returned to Miss D. Venkatassamy.

Your co-operation in responding to the questionnaire and its prompt return will be deeply appreciated.

Yours sincerely,

Director

MAURITIUS INSTITUTE OF EDUCATION

1 (b) DEPARTMENT OF HUMANITIES

AND SOCIAL STUDIES

Réduit,

18 February 1980

The Form III Teachers
of Social Studies

u.f.s. The Principal

.....

.....

Miss D. Venkatasamy will appreciate it very much if you could, please, respond promptly to the questionnaire that was mailed to you a fortnight ago. As pointed out in the original cover letter signed by the Director, Mauritius Institute of Education, your responses are of great importance to the Institute. Your co-operation will be therefore deeply appreciated.

2. STUDENT'S QUESTIONNAIRE (SOCIAL STUDIES)

I. This is not a test. We want your personal answers to the questions below for they will help us to understand better how you learn.

II. Do not write your name on the Questionnaire. Simply circle the appropriate letter in (a) and the appropriate numbers in (b) below:

(a) Boy .. .. B

(b) Girl .. .. G

(b) Type of school you are studying in. (Circle only 2 appropriate numbers).

State School 1

Junior Secondary School 2

Private School 3

Urban School 4

Rural School 5

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1. For each of the statements below, decide whether they are a true or false description ofyour Social Studies class, and check the appropriate box thus: [X]

(a) Our teacher always gives the information we need	TRUE	FALSE
(b) In class we read the Social Studies textbook so as to know its content.	TRUE	FALSE
(c) Our teacher asks questions that compel us to think a lot before we answer.	TRUE	FALSE
(d) We are given sufficient time in class to discuss certain problems of society.	TRUE	FALSE

(e)	We have to find information on our own sometimes.	TRUE	FALSE
(f)	We bring pictures and other materials of our own in the classroom.	TRUE	FALSE
(g)	We seldom discuss the problems of man in society in our class.	TRUE	FALSE
(h)	On certain occasions, we carry out visits or surveys outside the schools.	TRUE	FALSE
(i)	In class we sometimes use books and reading materials other than our textbook.	TRUE	FALSE
(j)	We spend much of our time in the Social Studies lessons listening attentively to our teacher.	TRUE	FALSE
(k)	The questions that we are asked in class are mainly to explain what our book has told us.	TRUE	FALSE
(l)	Our homework includes reading out of the textbook or writing answers to questions in our book.	TRUE	FALSE
(m)	The teacher is responsible for preparing the classroom pictures and charts.	TRUE	FALSE
(n)	As part of our homework, we look for other sources of information or carry out our own investigation.	TRUE	FALSE

2. (a) Below is a list of the objectives of studying Social Studies.

A. Learning facts about man and society.

B. Developing ideas and concepts.

C. Being able to look for various sources of information.

D. Being able to interpret maps, pictures, charts, graphs etc.

E. Being able to work and participate with others.

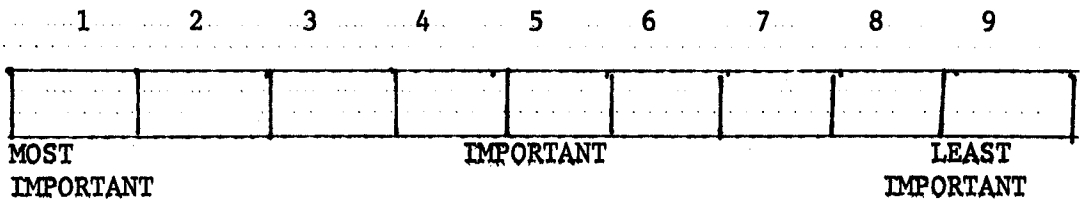
F. Developing tolerance for cultures and societies different from one's own.

G. Being able to accept the views of others and to change one's own view in the light of further information.

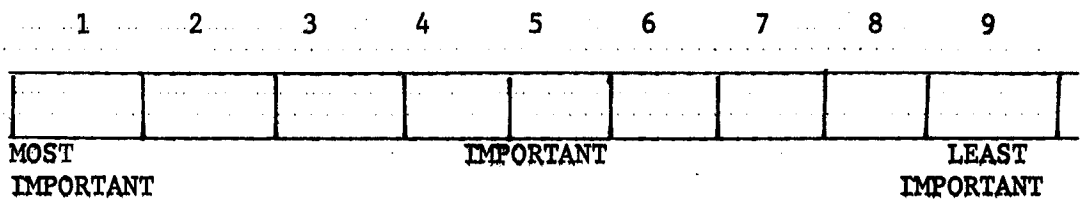
H. Thinking about one's own attitudes and values.

I. Accepting responsibility in a changing society.

Rank these objectives in order of their importance to you. In the spaces provided below, starting from the left at number 1, fill in the letter of the objective which you regard as the most important. For example, if you think that the most important one is "Being able to work and participate with others", you put E under number 1. Then choose the one that you consider the most important among the other eight and put its letter under 2, and so on.



(b) Your teacher may or may not rank these objectives in the same way as you have done. In the spaces provided below, rank these objectives in the order of their importance as you think your teacher might have ranked them.



HOW DOES GARÇON THINK AND FEEL?

4. Students are quite different from one another in how they think and feel about their schoolwork, about one another and about their teacher. Garçon, a Form III student, is facing a series of situations in his Social Studies classroom. How do you think he thinks and feels about the following situations? Complete the sentence under each of the situations given below to tell what Garçon is thinking and feeling. <u>There are no right or wrong answers.</u>

   A. At the very beginning of the Social Studies course, Garçon's teacher has told the class that it is good for them to take an active part in their lessons so as to make Social Studies the exciting subject that it is.

      To participate actively in the lessons, Garçon thinks that

      _____

      _____

      _____

      _____

   B. Garçon and his classmates are studying their second Social Studies Unit, "World Co-operation". They are advised by their teacher to collect and bring in class additional information on this theme.

      Garçon decides he must help the teacher. So he _____

      _____

      _____

      _____

      _____

C. Garçon and his friends are discussing among themselves about the best way of getting good results in their Form III Social Studies examinations. Some of his friends say that all they have to do is to memorise the facts in their Social Studies textbook.

Garçon himself has got other ideas. He feels that _____

_____

_____

_____

_____

D. At the end of a three years' course in Social Studies, Garçon knows that he will have to choose subjects other than Social Studies for the Form V Examinations.

He feels that _____

_____

_____

_____

MAURITIUS INSTITUTE OF EDUCATION

3 (a) DEPARTMENT OF HUMANITIES AND SOCIAL STUDIES

Réduit,
Tel. No. : 54-1031 11 June 1980

The Principal,
u.f.s. The Director,
Mauritius Institute of Education.

.....

.....

Sir/Madam,

Post Graduate Certificate Students in Social Studies are being sent on classroom visits on Fridays during the period 20th June to 18th July. This is part of a special assignment based on the administration of an observational schedule (the Flanders Interaction Analysis) and testing its utility as a precise technique which would standardize classroom observations in various regions of the island by several observers. The visits will take place in Form III Social Studies classes only.

I shall be grateful to you if you, would, please allow the student the permission to visit your school and to provide him/her with the necessary help that he/she will require in this respect.

Thank you for your co-operation.

Yours sincerely,

D. VENKATASAMY (Miss)

DV/GD

3 (b) FLANDERS' INTERACTION ANALYSIS CATAGORIES (FIAC)

(Source:- N. Flanders, Analyzing Teaching Behaviour, Addison Wesley, 1970)

TEACHER RESPONSE	1. Accepts feeling. Accepts and clarifies an attitude or the feeling tone of a pupil in a nonthreatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included.
	2. Praises or encourages. Praises or encourages pupil action or behaviour. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "UM hm?" or "go on" are included.
	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 his own ideas into play, shift to category five.
	4. Asks questions. Asking a question about content or procedure based on teacher ideas, with the intent that a pupil will answer.
TEACHER TALK	5. Lecturing. Giving facts or opinions about content or procedures; expressing his own ideas, giving his own explanation, or citing an authority other than a pupil.
	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 nonacceptable to acceptable pattern; bawling someone out, stating why the teacher is doing what he is doing; extreme self-reference.

	RESPONSE	8. Pupil-talk - response. 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.
PUPIL TALK	INITIATION	9. Pupil-talk - initiation. 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.
SILENCE		10. Silence or confusion. Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

4. CLASSROOM OBSERVATIONAL SCHEDULE (SOCIAL STUDIES)

(adapted from W. Evans and Edward M. Behrman, 1977)

Name of School: _____ Dates of Visits: _____

	A			B		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit
1. Teacher ensures that lesson objectives are made clear to the class.						
2. Contribution of teacher and class is approximately equally balanced.						
3. Teacher supplements the student's textbook content.						
4. Teacher uses a reasonable number of visual devices.						
5. Students are encouraged to find information from a variety of sources (e.g. pictures, maps, documents etc.)						
6. Teacher develops ideas, concepts and generalizations.						
7. Teacher strikes a balance between factual and thought-provoking questions						
8. Discussion between teacher and class, teacher and group, teacher and individual is encouraged.						

	A			B		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit
9. In the treatment of value issues, students are given the opportunity to clarify their own attitudes and values						
10. Students are encouraged to be objective in discussion and in evaluating information.						
11. Recording work is discussed with class but students are free to write or draw.						

Note: 0 = characteristic not observed 1 = characteristic observed.

Comments by observer: .....

Mauritius Institute of Education,
Réduit.

14 March 1980

DV/GD

MAURITIUS INSTITUTE OF EDUCATION

5. Social Studies Test, October 1980

Form III

Time: 1½ hours

Name: _____

School: _____

SECTION I (60 marks)

Answer ALL Questions

In questions 1 to 26, put a circle round the letter that best answers the question.

1. The Sahel is found in

   A Europe.
   B South America.
   C Africa.
   D Asia.

2. The UNESCO general headquarters is found in

   A Dakar.
   B Paris.
   C New York.
   D Santiago.

3. Chien de Plomb, now a reclaimed area of Port-Louis, was formerly known as

   A Bassin des chaloupes.
   B Trou Fanfaron.
   C Mer Rouge.
   D Bassin Caudan.

4. An example of a heavy industry in Port-Louis is

   A The micro-jewels factory.
   B The Chemical Fertilizer Plant.
   C The Shoe factory.
   D The soap-making industry.

5. Which of the following groups of women immigrated to Mauritius at the very end of the nineteenth century?

A Indian.

B French.

C African.

D Chinese.

6. The income per head of the countries below is considered to be high except that of

A Canada.

B Libya.

C France.

D Tanzania.

7. Malnutrition occurs when

A people do not eat the right kind of food.

B people eat the right kind of food in wrong quantity.

C people are short of food.

D people eat more than they should.

8. One of the activities of FAO in Mauritius is the setting up of

A the Institute of Education.

B the School Farm project.

C the Sugar bulk terminal.

D the North Irrigation Scheme.

9. The International Court of Justice

A promotes advancement of people in colonies.

B promotes the development of education.

C advises on international law.

D maintains peace and order in the world.

10. In what order the following cities grew up in the past?

A Ur, Mohenjodaro, Pompeii, Montpazier.

B Mohenjodaro, Ur, Pompeii, Montpazier.

C Ur, Pompeii, Mohenjodaro, Montpazier.

D Mohenjodaro, Pompeii, Ur, Montpazier.

11. The hinterland of a port is best defined as

A the countries from which a port collects its imports.
B the area found around a port.
C the area on which a port is found.
D the countries to which a port sends its products.

12. The smallest suburb of Port-Louis is

A Cassis.
B Roche Bois.
C Bell Village.
D Vallée Pitot.

13. The Central Business District of Port-Louis has not grown much horizontally because

A of too much traffic.
B of the attraction of tall buildings.
C of the high cost of living.
D of the high cost of the land.

14. Most Indian labour came to Mauritius from

A the western coastal area of India.
B the eastern coastal area.
C the north-western area.
D the central area.

15. The Chinese came to Mauritius as

A free immigrants.
B immigrants under contract.
C old immigrants.
D slave-traders.

16. The population density of a country is obtained by

A adding the total population of that country to its area.
B dividing the total population of that country by its area.
C substracting the area from the total population of that country.
D multiplying the total population of that country by its area.

17. World Cooperation is a necessity because

A many states are members of regional organisations.

B too many countries have become independent.

C the gap between rich and poor countries is widening.

D various races are found in all countries.

18. Man began to live in permanent settlements when

A men started to lead a nomadic life.

B farming became an organised activity.

C power was used to drive engines.

D the population was reasonably big.

19. New housing schemes for the wage earners who work in the industrial or harbour areas of Port-Louis have been provided.

A near the harbour.

B in the inner city.

C in the reclaimed areas.

D on the edge of the city.

20. Which of the following is not a traditional role for women in Mauritius?

A Working as clerks.

B Teaching.

C Working in industries.

D Nursing.

21. Study the cartoon below and then answer the questions that follow.

(i) Which of the following is not a problem being shown in the cartoon?

A Man showing sympathy for beggars.

B Lack of cooperation between rich and poor countries.

C Poverty.

D Malnutrition.

(ii) The problem in the cartoon is most likely to be found in

A Australia.

B USA.

C West Germany.

D Uganda.

(iii) One way to solve the problem shown in the cartoon is

A the provision of housing facilities.

B the provision of refugee centres.

C the provision of more international aid.

D the provision of better sanitation.

22. Study the document below and then answer the questions that follow.

Shariff is a village farmer. When he was asked about the sale of his products this year, this is what he told us "My neighbour tried to cheat me on my farm products last year. But now he cannot; I know how to count and weigh my bags of wheat properly. I also know the prices, for I can read them in the newspapers and write them in my notebooks".

(i) The main problem which Shariff faced last year was that

A his farm products were poor.

B he did not have a weighing balance.

C he knew the prices for his products.

D he was illiterate.

(ii) The United Nations agency which is most likely to have helped Shariff to solve his problem is

A FAO.

B ILO.

C UNESCO.

D WHO.

(iii) The United Nations has been of help to Shariff by

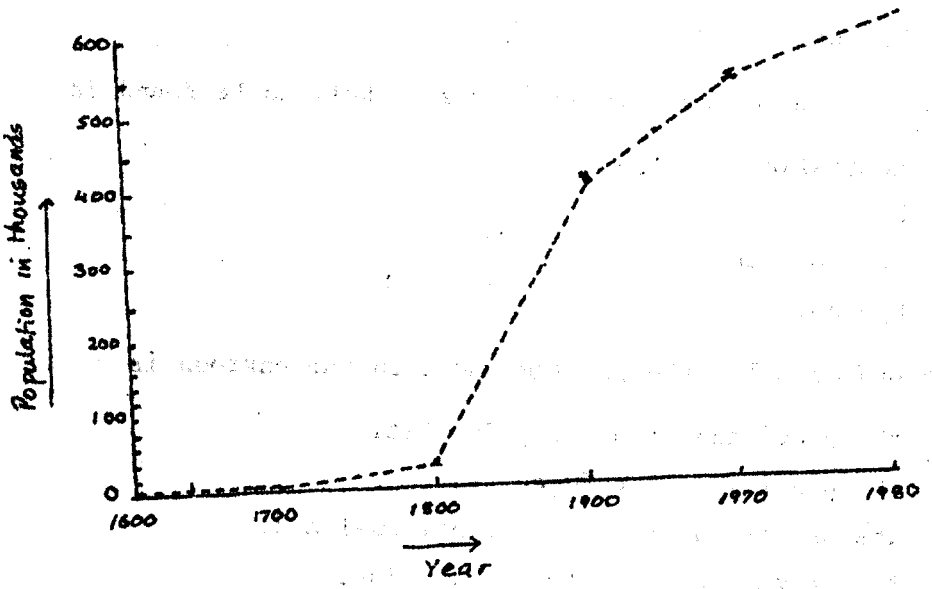
A building a primary school.

B providing sanitation facilities.

C providing adult education.

D building more roads.

23. Study carefully the graph showing rise of population in Sheffield (1600-1970) and answer the following questions.



(i) The population of Sheffield in 1800 was

A 20,000.

B 30,000.

C 35,000.

D 40,000.

(ii) From 1800-1900, the population increased by

A 8 times.

B 10 times.

C 12 times.

D 15 times.

(iii) After 1800, the population of Sheffield rose rapidly because

A large quantities of Iron ore were discovered.

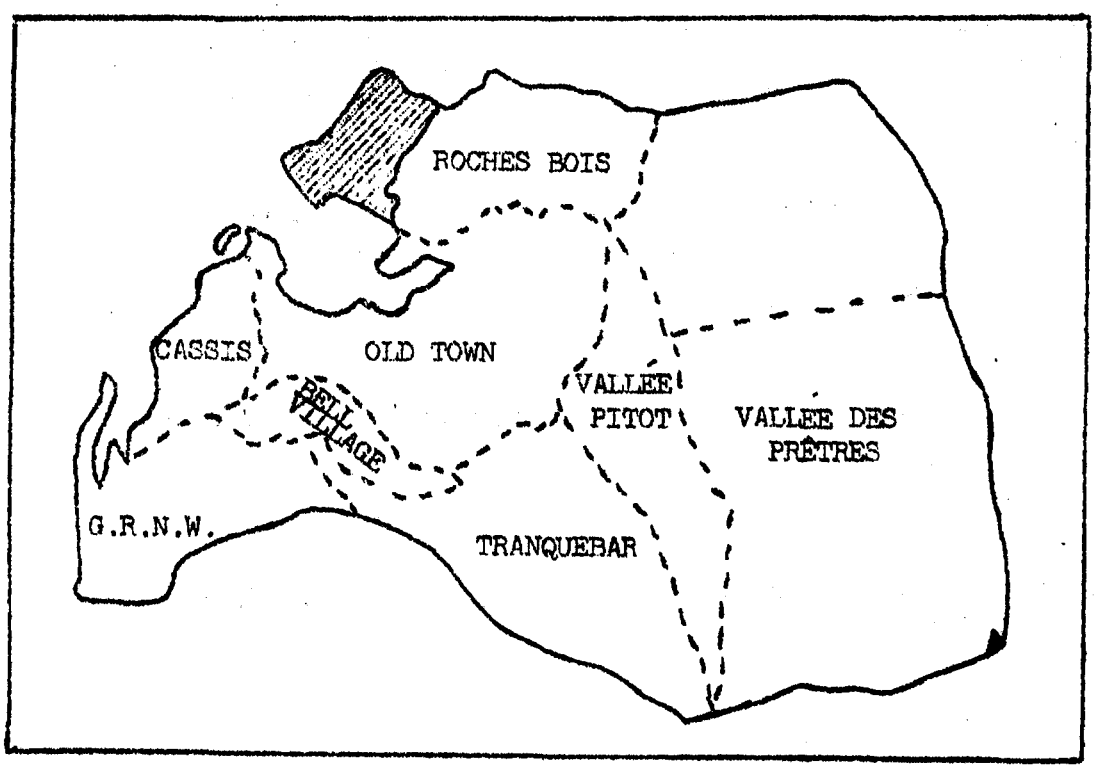
B Sheffield became an important port.

C Sheffield became more important than London.

D of the Industrial Revolution which made Sheffield become a highly industrial town.

24. Study the sketch-map below and then answer the questions that follow.

SUBURBS OF PORT-LOUIS



▲ Mountain Peak

Industrial Area

(i) The name of the peak shown on the sketch-map of Port-Louis is

A Priests' Peak.
B Pieter Both.
C Le Pouce.
D L'Echelle Rock.

(ii) The one suburb of Port-Louis which is not marked on the sketch-map is

A Stanley.
B Mangalkhan.
C Ste Croix.
D St Patrick.

(iii) The shaded industrial area shown on the sketch-map is

A The Plaine Lauzun area.
B The Sugar bulk Terminal.
C The Forges Tardieu area.
D The Mer Rouge area.

25. Read the extract below and answer the questions that follow.

"*Increasing cruelty to children in Britain could be partly due to more women going to work. It has been reported that many children suffer from injury due to lack of care and attention. One of the reasons for this could be that families are growing smaller resulting in less support from older children in managing the younger ones while the mothers are at work ...*"

(Extract from a Report from the Ministry of Health, Britain).

(i) The problem described in the extract is between

A children and their mothers.

B a mother's job and her obligations to her children.

C the small family unit and the big family unit.

D cruelty towards children by parents.

(ii) The article says that the working mother contributes to this problem

A very slightly.

B to a large extent.

C entirely.

D only in part.

(iii) British families are not only small but also nuclear, meaning that

A they are small units including father, mother and children.

B the units also include grandparents, father, mother and children living together.

C the units include father, mother, children and relatives by blood living together.

D the units include father, mother, children and in-laws living together.

26. Do you strongly agree (SA), agree (A), are undecided (?), disagree (D), strongly disagree (SD) with the following statements? Circle the proper letter/s (e.g. SA if you strongly agree) provided before each statement.

SA	A	?	D	SD	1.	The rich countries are becoming richer while the poor countries are becoming poorer.
SA	A	?	D	SD	2.	Better farming methods help to solve the food problem.
SA	A	?	D	SD	3.	Diseases in other countries are of no concern to us.
SA	A	?	D	SD	4.	ECOSOC is doing good work in developing countries.
SA	A	?	D	SD	5.	People living in towns lead a better life than those living in rural areas.
SA	A	?	D	SD	6.	Slums are features of cities found in developing countries only.
SA	A	?	D	SD	7.	More importance should be given to the problem of pollution in the city.
SA	A	?	D	SD	8.	Recreational spaces are not necessary in a city.
SA	A	?	D	SD	9.	Women workers should be tolerated and respected in society.
SA	A	?	D	SD	10.	It is a good thing to give boys and girls equal rights to education.

SECTION II (40 marks)

Certain parts of the world today are facing an acute food problem.

(a) Give 3 causes of this food problem.

_____

_____

_____

(b) Family Planning may help to solve this problem.
Can you say how?

_____

_____

(c) Name two other things that can be done to solve the problem.

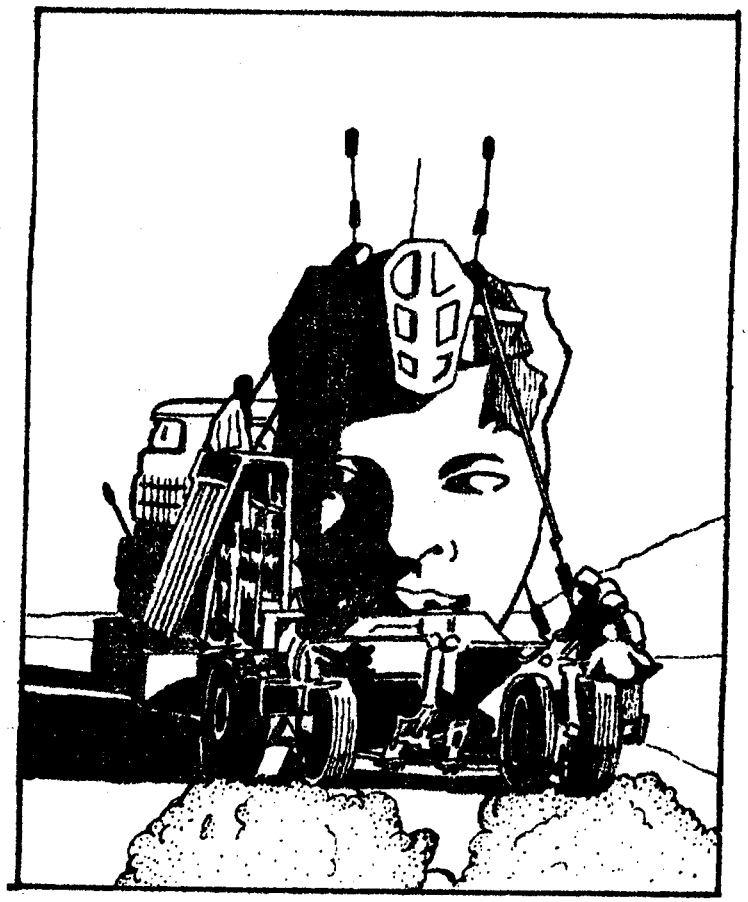
(i) _____

(ii) _____

(d) Which main agency of the United Nations can help to solve this problem?

_____

28.



A Which problem is being dealt with in the picture?

_____

B Can you name the country in which the monument is found?

_____

C Name one other historical site which has received similar attention from the United Nations.

_____

D Do you know what happened to the place where this monument was found originally?

_____

_____

29. Port-Louis is a town that has shown great developments since the days of Mahé de Labourdonnais.

(i) Give two reasons why the French chose Port-Louis as the harbour of Ile de France.

(a) _____

(b) _____

(ii) Name two methods which people used to travel in Port-Louis around the year 1900.

(a) _____

(b) _____

(iii) (a) What was the most important suburb of Port-Louis in 1841?

_____

(b) Give one possible reason why this important suburb stopped flourishing afterwards.

_____

(iv) Mention two developments which have occurred in the harbour since 1900.

(a) _____

(b) _____

30. (a) What do you understand by a 'suburb'?

_____

_____

(b) Give two reasons to explain why people live in suburbs.

(i) _____

(ii) _____

(c) (i) Would you say that *all* suburbs of Port-Louis have adequate facilities?

_____

(ii) Give two reasons for your answers.

(a) _____

_____

(b) _____

_____

31. Study the chart below and then answer the following question.

The rate of women participation in jobs outside home in Mauritius

Year	*Rate for Women*
1962	17%
1972	20%
1980	22%

(Rate is defined as number of female workers over the number of people employed)

(i) Do the figures reveal an increase in women's employment since 1962?

_____

(ii) (a) In which sector of employment has there been a great increase of women participation?

_____

(b) Can you explain why so many jobs for women have been created in this sector?

_____

_____

(iii) (a) Which other sector of employment has the second highest proportion of women workers in Mauritius?

_____

(b) Would you call this a traditional field or a new field of activities for women? Why?

_____

_____

5. (a) FORM III SOCIAL STUDIES SPECIFICATION GRID - EVALUATION 1980

A - Facts; B - Concepts; C - Generalizations; D - Graphic data/Documents; E - Critical Thinking, F - Social Skills/Empathy; G - Awareness/Interest; H - Acceptance of Responsibility.

ITEMS	TEST CONTENT	OBJECTIVES								MARKS ALLOTED
		KNOWLEDGE/ COMPREHENSION			SKILLS			ATTITUDES		
		A	B	C	D	E	F	G	H	
1	Population and food Supply	✓								1
2	World Co-operation	✓								1
3	Emergence of Urban Communities	✓								1
4	Living in Towns	✓								1
5	The Changing Role of Women in Mauritian Society	✓								1
6	Population and Food Supply	✓	✓							1
7	Population and Food Supply	✓	✓	✓						1
8	World Co-operation	✓	✓							1
9	World Co-operation	✓	✓	✓						1
10	Emergence of Urban Communities	✓	✓							1
11	Emergence of Urban Communities	✓	✓	✓						1
12	Living in Towns	✓	✓							1
13	Living in Towns	✓	✓	✓						1

ITEMS	TEST CONTENT	OBJECTIVES								MARKS ALLOTED
		KNOWLEDGE/ COMPREHENSION			SKILLS			ATTITUDES		
		A	B	C	D	E	F	G	H	
14	The Changing Role of Women in Mauritian Society	✓								1
15	The Changing Role of Women in Mauritian Society	✓	✓							1
16	Population and Food Supply	✓		✓						1
17	World Co-operation	✓		✓						1
18	Emergence of Urban Communities	✓		✓						1
19	Living in Towns	✓		✓						
20	The Changing Role of Women in Mauritian Society	✓		✓						Total 1 20
21	Population and Food Supply	✓	✓	✓	✓	✓		✓		4
22	World Co-operation	✓	✓	✓	✓			✓		4
23	Emergence of Urban Communities	✓			✓					4
24	Living in Towns	✓	✓		✓					4
25	The Changing Role of Women in Mauritian Society	✓	✓	✓	✓			✓		Total 4 20
26	Population and Food Supply	✓				✓		✓		2
	Population and Food Supply	✓				✓		✓		2
	World Co-operation	✓				✓	✓	✓		2
	World Co-operation	✓				✓		✓		2
	Emergence of Urban Communities	✓				✓	✓			2

ITEMS	TEST CONTENT	OBJECTIVES								MARKS ALLOTED
		KNOWLEDGE/ COMPREHENSION			SKILLS			ATTITUDES		
		A	B	C	D	E	F	G	H	
26	Emergence of Urban Communities	✓				✓		✓		2
	Living in Towns	✓				✓		✓		2
	Living in Towns	✓				✓		✓		2
	The Changing Role of Women in Mauritian Society	✓				✓	✓	✓		2
	The Changing Role of Women in Mauritian Society	✓				✓	✓	✓		2 Total 20
27	Population and Food Supply	✓	✓			✓		✓		8
28	World Co-coporation	✓	✓		✓					8
29	Emergence of Urban Communities	✓	✓					✓		8
30	Living in Towns	✓	✓					✓		8
31	The Changing Role of Women in Mauritian Society	✓	✓		✓			✓		8 Total 40

Mauritius Institute of Education,
Social Studies Section,
Réduit.

27 November 1980

6. INTERVIEW SCHEDULE.

Consideration of the Situation in the Early Years of the Project.

1. When did you first hear about the Social Studies Project being introduced in your school?

   _____ Month _____ Year

2. When did you first try to teach the new programme?

   _____ Month _____ Year

3. How long have you been teaching Social Studies?

   _____

4. What was your reaction to the new course at first?

   (a) Very positive.

   (b) Somewhat positive.

   (c) Indifferent.

   (d) Somewhat negative.

   (e) Very negative.

5. Why did you have such a reaction?

   _____

   _____

6. When you first started to teach Social Studies, did you feel you had a clear understanding of the subject,

   (a) Yes.

   (b) No.

   (c) Other (specify).

   If yes, how would you describe the subject?

   _____

   _____

   If no, what was not clear about the subject?

   _____

   _____

7. Did you believe that there was a need for this new programme?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, why? .....

If no, why not? .....

8. In order to teach Social Studies, did you think you would have to make any changes in your behaviour or in your role as a teacher?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, what were the changes you were expected to make?

.....

.....

If no, why not? .....

9. Were these changes in your behaviour made clear to you in workshop sessions or in the Teacher's Guide provided by the Mauritius Institute of Education?

(a) Yes.

(b) No.

(c) Other (specify).

10. Did you believe that you could make these changes?

(a) Yes.

(b) No.

(c) Other (specify).

11. Were the objectives of the Project made sufficiently clear to you?

(a) Yes.

(b) No.

(c) Other (specify).

12. Were you encouraged to describe your feelings about the new programme and the materials in schools by the Mauritius Institute of Education?

(a) Yes.

(b) No.

(c) Other (specify).

by your school officials?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, how did you respond to this encouragement

by the Mauritius Institute of Education? .....

by your school? .....

If no, why do you think no such encouragement was given by

the Mauritius Institute of Education? .....

.....

by your school? .....

.....

13. Did you find any serious problems in trying to carry out the new programme?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, what were they? _____

_____

_____

(Probe: any others?) _____

_____

14. How much help from the following did you get to solve these problems?

	1. Great	2. Some	3. Little	4. None	5. Do not know
(a) the Mauritius Institute of Education					
(b) School					
(c) Inspectors					

15. What sort of help did you get from each of the following?

(a) the Mauritius Insitute of Education _____

_____

(b) School _____

_____

(c) Inspectors _____

_____

16. What was your students' general attitude towards the Project at first?

(a) Very positive.

(b) Positive.

(c) Indifferent.

(d) Somewhat negative.

(e) Very negative.

17. What was your own general reaction to the programme in the first few months that you tried it?

(a) Very positive.

(b) Positive.

(c) Indifferent.

(d) Somewhat negative.

(e) Very negative.

Consideration of the situation today with respect to the Social Studies Project

18. Have you made any change from your first reaction to the Project over the years?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, how would you account for the change? Were there any particular people or group of people who influenced your change in reaction?

If no, do you feel the same way over the years as you did at first?

19. Do the problems which you faced earlier, continue to exist? (Review problems).

(a) Yes.

(b) No.

(c) Other (specify).

If yes, which ones? _____

_____

20. Have any new problems arisen since your first attempt to try out the Social Studies project and the present time?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, what are they? _____

_____

21. Do you find your classroom practice has improved over the years?

(a) Yes.

(b) No.

(c) Other (specify).

Have you tried out anything new since your first attempt?

If yes, list new activities _____

_____

If no, why not? _____

_____

22. In regard to the understanding of what Social Studies is all about, do you feel your knowledge of the Project's intentions and philosophy has increased over time?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, what has helped you to increase your knowledge of the Project?

_____

_____

23. In regard to the need for a Social Studies programme, do you feel the same as previously? (Review previous feeling).

(a) Yes.

(b) No.

(c) Other (specify).

If yes, why ____ _____

If no, why _____

24. In regard to the clarity of the objectives of the new programme, do you feel differently now?

(a) Yes.

(b) No.

(c) Other (specify).

If different, why? _____

_____

25. In regard to making changes in your behaviour or role as teacher, have you changed your mind about being able to make such changes?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, why? _____

_____

26. In regard to the following people who might have helped you at first, has there been any change in the way they have helped you?

(a) the Mauritius Institute of Education - (i) Yes. (ii) No.

(iii) Other (specify). How? _____

(b) School - (i) Yes. (ii) No.

(iii) Other (specify). How? _____

(c) Inspectors - (i) Yes. (ii) No.

(iii) Other (specify). How? _____

27. In regard to your students' attitudes towards the new programme, do you feel they are

(a) more favourable.

(b) less favourable.

(c) indifferent to the Project.

28. In regard to your overall reaction to the introduction of Social Studies in schools, what would you say your feelings are now?

	Initially	*Now*
Very positive.		
Somewhat positive.		
Indifferent.		
Somewhat negative.		
Very negative.		

29. In general, do you feel

(a) more eager

(b) less eager

to implement the Social Studies in school?

30. Do you want to mention anything else which has inhibited or facilitated the teachers' efforts to carry out the innovation?

(a) Yes.

(b) No.

(c) Other (specify).

If yes, what? .....

.....

.....

Mauritius Institute of Education,
Social Studies Section,
Réduit.

20 November 1979

DV/GD

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