A CASE STUDY OF THE USE OF

CLOSED CIRCUIT TELEVISION IN

PRE-SERVICE TEACHER EDUCATION

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Abstract

Faced with the general problem that there can be
'adoption' of an innovation without its effecting
intended changes, the ultimate interest of this study
is to make some contributions towards facilitating
the implementation of educational innovation.   The
research involves a case study of the use of closed
circuit television in pre-service teacher education
as an innovation at the primary division of the
Christchurch Teachers' College. It first investigates
the severity of problems experienced by regular and
non-regular users (or which have led to the non-usage
of the innovation).   Secondly, it examines the
perceived relevance of a list of variables which have
been proposed in the literature as influencing the
process of change and adoption.   Relevance in this
study is considered in relation to perceptions of the
innovation in an organizational setting.

The participants for the study consisted of a
defined population of the lecturing staff.   This
population was selected on the basis that they were
full-time, had been on the staff since the introduction
of CCTV at the College, and were in regular attendance
during the academic terms.   Reference to the record
of bookings made for use of the equipment revealed data
to determine the 28 users as being 13 non-regular and
15 regular users, as distinct from the 15 non-users.
These three groups provided the information sought.
The information was obtained by means of a semi-structured
interview schedule and the use of two separate questionnaires.

The first questionnaire was intended to elicit a
measure of the extent to which problems were experienced
by the regular, non-regular and non-users in relation to
CCTV.   As a preliminary to this questionnaire, a semi-
structured interview was used to identify the difficulties
or problems which had been experienced.   The list of

problems thus obtained formed the context for the questionnaire 1.

The second questionnaire contained a list of 25 variables. These represented concepts drawn from the literature where it was suggested that they influenced change and the adoption of an innovation. The participants were required to rate each of the variables on the extent to which they perceived their relevance in relation to the use of CCTV by the staff as a whole.

A four-point rating scale (i.e. Great Deal, Much, Not Very Much, and None) was used to obtain the responses in both questionnaires. Descriptive statistical procedures involving means and standard deviations were used to analyze the data, in accordance with the aims of the study.

The findings were used to identify the particular problems that could be anticipated so that they might be obviated before they became dominating and hindered adoption. The findings also showed that the problems were on the whole not severe. The variables in Questionnaire 2 generally wore seen to be relevant to the case study. Those variables which were relatively outstanding over the others were examined. It appears likely that they have influenced adoption. It was concluded that the problems experienced were of a relatively minor nature.

It is suggested that the procedures used in the study do go some way towards identifying both difficulties and facilitating factors. These procedures may be of some use as one aspect of evaluation for change agents, for administrators or for other personnel concerned with change and adoption.

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CHAPTER I

- Introduction -

The Problem

General

Innovation and its process have been the focus of increasing interest in recent years. During this period change in education appears to be related to prevailing and endemic changes in the technological and social world. It may be assumed that innovations are necessary if educational organizations are to meet the burgeoning challenges generated by current change and development.

Faced with both the prospect and need for significant change educators have advanced several different kinds of hypotheses to explain and predict the effects of innovations. They have also employed various strategies designed to bring these about. Massive inputs of resources have been geared to achieving intended ends. Yet, despite numerous adoptions, evaluation studies have indicated that such efforts have in general been less than successful. Few significant additional changes, corresponding to the intended consequence of the innovation, have in fact been effected, (Abbot and Eidell, 1970; Carlson, 1965; Fullan, 1972; Goodlad et al, 1970; Gross et al, 1971; Heathers, 1972; Martin & Harrison, 1972; Sarason, 1971; Smith and Keith, 1971).

Gross et al, (1971) examined the educational literature on the implementation of organizational innovations. He concluded that user resistance to change was the major explanation for the apparent lack of implementation. There may be, however, a number of underlying implications. For example, resistance may reflect uncertainty on the part of the users about their ability to play new roles. (Fullan, 1972). Or when change involves a rearrangement of patterns of power, association, status, skills and values in the organization (Bennis, 1966), it may be seen as a threat to the prerogatives of those established in the organization and therefore resisted. In any case, in recent years, a number of variables have been suggested as contributing to or inhibiting adoption in education. These variables have been seen to include the

attributes of the innovation (e.g. Brickell, 1969; Chin,
1967; Katz, Levin and Hamilton, 1963; Rogers and Shoemaker,
1971; the strategies of change (Bennis, Benne, and Chin,
1969; Havelock, 1969; Maguire, 1970; Miles, 1964); the
organizational setting (Halpin, 1967; Jones, 1969;
Miles, 1965); and an individual's perception (Barnett,
1953; Foster, 1969; Hilfiker, 1969; Rogers, 1962).

Miles, (1964) suggests that change is difficult for
permanent systems, whether they be persons, groups or
organizations.   According to him the major portion of
the available energy in a system is used in carrying out
routine operations and in maintaining the existing
relationships within the system.   Consequently, the
fraction of energy which is left over for matters of
diagnosis, planning, innovation and growth is usually
very small.   Hoyle argues (1969) that a basic problem in
education is that of 'tissue rejection' whereby an
innovation, although formally adopted by a school, does
not become an effectively functioning part of the system.
In consequence, there can be no assurance that they will
be adopted in more than a superficial manner (Huberman,
1973).

The hiatus between the inception of an innovation and
its full implementation suggests that in future it may be
necessary to plan greater emphasis on action research
which has its focus on adoption.

Aims of the study

Insofar as there an be 'adoption' without effecting
intended changes, it may be inferred that members of a
given organization are not making use of the innovation
to the extent that it becomes incorporated as an integral
part of the system's programme.   Thus, whether the
individual members use the innovation regularly, non-
regularly or do not use it at all may determine whether
or not the innovation becomes an effectively functioning
part of the system as a whole.

Within the context of an organization involving
a specific innovation, a study of two aspects may
provide useful information for both this system and
for similar systems intending to plan for change. The
two aspects are (a) the problems experienced with the
usage (or which have led to the non-usage of the
innovation);   (b) perceptions of organizational
responses to the innovation, in relation to a list of
variables which have been proposed in the literature as
influencing the process of change and adoption.

In any particular system it seems probable that there
will be problems associated with change. Responses to
problems of innovating may be expressed as human defences,
as organizational constraints or as other means which can
frustrate intentions to bring about change. On the other
hand, as Gorton, (1971) indicated, although one should not
assume that change will always be resisted, research and
experience show that the change agent frequently has to
face many obstacles. It seems reasonable to assume that
as one becomes more involved with change, one encounters
new difficulties or problems which were not experienced
before. Thus, while some members may not be using an
innovation due to some specific problems, regular and
non-regular users may encounter problems of a different
nature.

If these problems are left to become dominating
factors the actual adoption of the innovation may subsequently
be prevented.

Gross et al, (1971), had suggested the possibility
that organizational members who were not initially
resistant to change, may encounter a number of obstacles
in their efforts to implement an innovation. Subsequently
they could develop a negative attitude to change.

In planning to prevent or at best ameliorate such
effects, and in the interest of economy, research priorities

would have to be established. Such priorities would
specify the problems that needed researching, rather than
being solely concerned with solutions thought to be desirable.
By scrutinizing such problems, certain solutions might be
found preferable to a particular one which was originally
thought to be desirable.

Thus, in a specific case study, attention could be
given to finding out the particular difficulties or
problems experienced (a) by the regular and the non-regular
users with their usage of the innovation; and (b) by the
non-users and which may have discouraged or prevented its
usage. Following this, the extent to which these problems
were experienced needs to be studied.

From the information gained about the severity of
each of the problems, it becomes feasible to identify those
which have been experienced more severely than others.
These problems operationally defined, would be those which
are above the average scores of severity by the total sample
and of any or all of the three groups of regular, non-regular,
and non-users. Prior attention could then be given to
studying these particular problems to permit their alleviation.
Each problem could be treated in accordance with how severe
it has been for the three groups respectively. To illustrate,
assume that problem X is above the average severity score of
the total sample. Further analysis may reveal that it is
also above that of the non-users, but not of the other two
groups. Subsequently, in any attempts to study this
problem, reference needs to be made particularly to the non-
users. This understanding would provide the basis on which
the problems could be dealt with appropriately.

Just as problems can influence the extent to which
the innovation is adopted in the particular system, so does
it seem to be the case for a number of variables as suggested
in the literature. Within an organizational framework
these variables may be summed up as covering attributes of
the innovation, strategies of change, organizational setting
and human perception. It appears worthwhile to have a
measure of the relevance of these aspects as perceived by

the regular, non-regular and non-users to the use of the
innovation by the organizational members in general.   As
these variables have been presumed to influence change by
aiding or hindering adoption, it becomes likely that they
may also lead to some understanding in connection with the
problems which were experienced.

If the problems were not found to be severe in
general, a recognition of the variables which may have aided
adoption, would provide valuable information, particularly
for similar systems planning for change.   On the other hand,
if the problems were on the whole severe, then the variables
which are believed to aid adoption, but are below the average
scores of relevance would form the basis for follow-up
studies.   It is probable that study of these aspects may
reveal some connection with the problems noted, and thus
provide information which may aid in the alleviation of the
problems.

An investigation of these aspects could lead to
further research which could contribute towards increased
understanding of the elements hindering or aiding adoption.
This would then pave the way for facilitating the implement-
ation of educational innovation.

In conclusion, the aims of this study may be summed
up as follows:

(a)   To find out the difficulties or problems experienced
        by:-   1. the regular and non-regular users with
                    their usage of the innovation;

                2. the non-users who may have been discouraged
                    or prevented in its usage.

(b)   To find out the extent to which the above problems
        were experienced, in their order of severity.

(c)   To find out the problems which were above the average
        severity values of the total sample and of any of
        the three groups of regular, non-regular and non-users.

(d)   To find out the extent to which the regular, non-
        regular and non-users perceive the relevance of a list
        of variables to usage of the innovation at the general
        organizational level.

(e)   To find out the variables which are above the mean
        score of relevance of the total sample and of any
        of the three groups of regular, non-regular and
        non-users.

Definition of Terms -

An Innovation

For the purposes of this study, an innovations would
be seen as a new product which involves the novel application
of knowledge (relative to the people and their situation)
to bring about deliberately some desired specific changes
seen to be more efficacious in accomplishing the defined
objective of the system.   This definition indicates a
concern with the aspect of adoption.   It presupposes that
a student teacher, administrator, or entire school, puts
into operation a new tool which is distinctively different
from any former application by the people in the particular
situation.   There is thus a concept of novelty and an
element of deliberate planning or intention to achieve
intended ends.   The specific changes are desired as they
are seen as improvements over present or past practices in
attaining a higher level of achievement of the defined goals
and objectives.   The element of specificity implies that
the change is not vague and diffused but defined and specific.

Regular and non-regular users

The regular users would be seen as the organizational
members with above average hours of usage.   The non-regular
users would be seen as those with below average usage.

In the following chapters, a review of the literature
is to be found in Chapter II.   The background of the case
study will be found in Chapter III.   Chapter IV will deal
with the research design.   Chapter V will present an analysis
of the data obtained.   The final chapter will include the
findings, discussions and conclusions.

CHAPTER II

LITERATURE REVIEW

Introduction

Two of the research traditions which have contributed
considerably to the study of the process of planned change in
education are rural sociology and social psychology.   This
is exemplified in the studies of Bennis, Benne and Chin,
(1969); Kurt Lewin, (1962); Lionberger, (1964); Lippitt,
Watson and Westly, (1958); Miles, (1964); Rogers, (1962).
These works as pointed out by Clinton and House, (1970)
provide an overview of the range of studies done on diffusion
research.   This range includes studies of the characteriz-
ation and categorization of adopters, of channels of
communication, of differential diffusion rates, of advocacy,
and to a lesser degree of the characteristics of innovations.
Although these studies provide important implications for the
study of educational change, the problem of explaining the
apparent failure of many innovative attempts in education
still remains. This suggests that much more will need to
be done to study the process of change in education.

This review, drawn from existing related literature,
is limited to an appraisal of studies concerned mainly with
the implementation and adoption, rather than with the sources
of change and the generation of specific innovations.   To
provide further support to the relatively limited research
on change in education references are made where appropriate,
to studies in other fields, such as in industrial settings,
rural sociology and social psychology. Although the focus
in educational change is on the school as the target system,
it may be extrapolated to other educational organizations,
such as Teachers' Colleges and Universities.

The review deals in turn with the following topics:

2.1   The Relative Failure of Innovation Implementation
in Education.

This presents the problem of unsuccessful attempts at
innovation in education in the last fiftenn years, and
the evident lack of adoption.   It also looks at a number

of suggested reasons for such failure and considers some
implications for future attempts.

2.2   Obstacles to Change

This section considers those variables which can
hinder the process of change. These are mainly in the
form of organizational constraints and human resistance.
It presents various problems which an educator may encounter
in trying to bring about change.

2.3   Factors which Influence the Extent and Speed of an Innovation in Education

Under this heading the following topics will be dealt
with individually to ascertain their effects on change.

2.3.1	Nature of the educational system
2.3.2	Attributes of innovations
2.3.3	Models of the innovation process
2.3.4	Strategies of introducing innovations
2.3.5	Personal characteristics of organization members
2.3.6	The organizational setting

2.4   The Relevance of Individual Perception to the Adoption of an Innovation

This section reviews the significance of perception,
and how this may have an influence on the adoption of an
innovation.

The studies reviewed are grouped under the above
headings for convenience. They need not however, be taken as
mutually exclusive. For example, the problem in 2.1 may be
affected by 2.3, 2.4 and 2.5.

The review seeks to create an awareness of the many
variables involved in effecting change, and in institution-
alizing an innovation. Perhaps it will contribute to a
better understanding of how difficult it is for man and his
institutions to be changed.

2.1 The Relative Failure of Innovation Implementation in Education

In the search for solutions to educational problems, and in the drive to improve the quality of instruction, innovations are generated. Subsequently, changes in current practice directed to existing goals, or the changes in goals with a consequent adoption of new practices designed to achieve them are attempted.

Despite many attempts to change teaching practices, studies (Adams and Biddle, 1970; Flanders, 1970; Jackson, 1968; Stevens, 1910) on classroom practice, points to the prevailing conservatism. Perhaps one could admit that educational systems are by nature conservative. As Adam Curle (1968) has said, "....in most societies for most of recorded time, education has been a reactionary force rather than a progressive one. Education, often closely associated with religion, has tended rather to hallow antiquity than to promote innovation." Huberman (1973) suggests that the very notion of innovation is in a sense a conservative one. This is in its primary function of making the unfamiliar into familiar, to graft the new onto the old. Processes of assimilating (taking in new ideas or practices) and accommodating (adopting former structures to these new ideas or practices) are by their very nature slow and gradual. Huberman points out that to change education amounts in fact to changing the way parents bring up their children. It alters the relations between adults and young people and disturbs the controls the former have over the character of the coming generation.

Most societies have been suspicious of experiments with the education of their children, and there are many economic, social and administrative factors that contribute to the sluggishness of educational change. These, as pointed out by Anderson (1971), include the high cost in time and resources of converting personnel, buildings and physical resources to the requirements of proposed new arrangements. For the educator, to propose and carry through significant reforms is often to work against heavy odds, and to invite

conflict with the protectors of the status quo, not only in the society itself, but also in the teaching profession.

According to Abbot and Eidell (1970), educational organizations have on the whole so far effectively resisted the adoption and institutionalization of radically new instructional materials, processes or arrangements.

Gross et al, (1971), examined the educational literature on the implementation of organizational innovation (p.29-38). They were primarily interested in the extent to which organizational members have changed their behaviour patterns as a result of adopting an innovation. Except for very subjective personal assessments, in most of the studies they found no data or real evidence that the innovations were actually implemented. The conclusion reached in explaining this lack of implementation was that it resulted from user resistance to change.

Although it has long been felt by many administrators that the crucial, if not the sole problem in the successful implementation of innovation is to overcome the initial resistance of the individuals and/or groups whose behaviour and attitudes are going to be affected by the change, this belief is now beginning to be challenged. Carlson (1965), for example, studied the rates of adoption of three educational innovations. He reports the results of a follow-up case study in one of the school systems where the superintendent had reported the successful initiation of programmed instruction. It was found that a year and a half after the reported successful initiation, the innovation was not being carried out properly on a daily basis in the schools. When this organizational innovation, designed to permit students to work at their own rates, was introduced, teachers failed to comply with important new expectations. In fact, practices to keep students working at similar rates emerged. Carlson concluded that teachers invented ways which permitted them to recapture some aspect of their old roles as directors of learning. He argues that a new definition of what constitutes teaching in relation to programmed instruction must be instilled in the teachers. Gross and his associates, found in their own case study, that despite an initially favourable predisposition by those who are going to be

primarily affected by a change in a school, the proposed
innovation ultimately met with failure. Their data showed
that the innovation, a major organizational change in the
role of the teacher, was not being effectively implemented
by the teachers who had initially welcomed it. The authors
attributed the failure of the innovation to various factors.
They found that the teachers were not sufficiently clear about
the change, nor did they understand their role. The necess-
ary skills and resources were not available. In addition,
there was a lack of organizational compatibility with the
innovation. When the teachers tried to carry out the
innovation and faced organizational problems which the
administration failed to help them resolve, resistance began
to develop. Gross et al, suggested the possibility that
organizational members who were not initially resistant to
change, may encounter a number of obstacles in their efforts
to implement an innovation. Subsequently, they could
develop a negative attitude to change.

Fullan, (1972) in an investigation of models and
approaches to innovation over the last fifteen years,
examined actual user experiences with educational change.
The most detailed studies of the use of innovations and the
users' role in the process of school change that Fullan found
were by Goodlad et al, (1970); Gross et al, (1971); Martin and
Harrison, (1972); Sarason (1971); and Smith and Keith (1971). *

Goodlad et al, (1970), gathered information in schools
across the United States in order to determine the extent to
which educational reform was finding its way to the classroom.
They reported a dearth of educational change in the classroom.
In their suggestions as to why this was so, the authors
commented that teachers were left to their own devices before
they had internalized the full meaning of the intended change.
Thus there appears to be a gap between what teachers think

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* Very few studies of users' experience with educational change
are available. At a more general level, Silberman (1970
p.5) amasses a large amount of data on the "failure of
educational reform" at the user level in the last fifteen
years, but offers very little analysis of why this has
occurred.

they are doing and what they have been actually observed to do.

The failure of the forementioned attempts at educational change is further confirmed by Martin and Harrison's (1972) experiences.   In a city school system, the school budget was increased by 35% in order to introduce massive reforms. These included the reduction in class size, the appointment of two full-time remedial reading teachers to each of the elementary schools, retraining programmes for five out of every six teachers, and the initiation of more than sixty curricular and teaching reforms.   Two years later, an evaluation survey led to the conclusion that no measurable change in student achievement had occurred.   Martin and Harrison proceeded to examine the question of why reform after reform in schools across the United States has produced minimal change.   The problem is viewed by the authors as attempting to introduce new roles without realizing that such new roles are related to an elaborate existing system of relationships to other roles, expectations, rules and forms of organizations. These variables need due attention as they effectively prevent any real change from occurring even when there is agreement on the desirability of certain behavioural changes.

Sarason (1971) in his book, The Culture of the School and the Problem of Change, draws on his numerous experiences of failure with school change.   He examines the development of new maths in order to formulate and identify the key aspects of the way change is introduced in the school culture. Sarason notes two fundamental errors.   First, as he states it: "no one formulated the problem as one requiring teachers to unlearn and learn" (p.41).   Teachers were also "being asked to learn procedures, vocabulary, and concepts that were not only new, but likely to conflict with highly overlearned attitudes and thinking.   Many of the teachers were unable to voice their uncertainties and lack of understanding." The second major observation is that the implementation of a new curriculum requires knowledge of the change process conceptualized in social system terms.   This is to say, any significant change in an ongoing institution involves changes in the roles and role relationships of individuals. These changes must be directly confronted and understood if effective change is to occur.

In a review of the failure of the curriculum reform
movement in the United States in the late 1950s and 1960s,
Silberman (1970) drew conclusions similar to those reached
by Sarason. He states (p.180) "Because the reformers were
university scholars with little contact with public schools
......they tended to ignore the harsh realities of classroom
and school organization."

Silberman and Sarason both mention that an aspect of
the modal process of change in the last fifteen years is that
the nature of the process of implementation has been contrary
to the very objectives intended. Silberman suggests that
"the failure to involve ordinary classroom teachers in the
creation and modification of the new curricula....tended to
destroy, or at least inhibit the very spirit of inquiry the
new courses were designed to create" (p.182). In Sarason's
words, "If there is any one principle common to efforts at
change, it is that one effects change by telling people what
is the 'right' way to act and think" (p.193).

Smith and Keith (1971) have written an insightful
case study of the establishment of an innovative elementary
school. They refer to it as Kensington, a new open-space
elementary school, that was deliberately designed as experi-
mental. As both Smith and Keith were intensely involved with
all aspects of the schools' operation, they were able to
provide first hand data. The experience of users with
educational change was eventually of frustration and failure.
Initially, an innovative principal was appointed. He then
hired eighteen teachers and five teacher aides who had
selected the school because of the opportunity to do some-
thing new. At the end of the first year, only eight teachers
were returning for the second year. In the middle of the
second year, the principal left the school for another job.

Reasons for this failure, can be summed up as residing
in the lack of plans and the lack of attention to the problems
of implementation - to the problems of learning new roles on
the part of users (students, partents, and principal). There
was of course a formal statement of goals, but the goals were
not linked with the means for achieving them. Thus the
evaluation data showed that individual staff members and small
subgroups each held their own views and interpretations of

what the goals meant in practice. Little note was taken of
the likely uncertainty, on the part of users, regarding the
learning of complex new roles.

Fullan, from his investigation of the various attempts
finds that the modal process of change has been characterised
by a pattern whereby innovations are developed external to
schools and then transmitted to them on a relatively univers-
alistic basis. For example, in Gross's case study, the
innovation was introduced to teachers as a fait accompli. The
users of the innovations have had a restricted role in the
consideration, formulation and decision to try out the
innovation. They were seen as relatively passive adopters
of the best of recent innovations.

Giacquinta (1973) points out from his review that the
complexities of resocialization for potential users have not
received much attention. Although the programme proposals do
identify the need for retraining personnel, they fail to
acknowledge the degree of resocialization required for
adequately performing one's role in adopting an innovation.
Grossly underplayed and often ignored, is the difficulty of
effecting changes in peoples' basic values, attitudes and
behaviour. This is especially so, on the enormous scale
that many programmes propose, e.g. Detroit Great Cities
Project (Byerly and Rankin, 1967); Head Start (Westinghouse,
1969); Higher Horizons (Wrightstone, Forlane and Frankel,
1964).

To conclude this section, attention is drawn to certain
implications about the process of change drawn from the
studies covered by Fullan. These include:

a)   The values and goals of users, as articulated by them,
      have no direct influence on the process. The results
are that downward innovations do not take hold, and that
diversity of innovations is not allowed for.

b)   Social system or role changes in user systems are not
      recognized and planned for.

c)   There is little apparent awareness that innovations
      are likely to require of the users a considerable
measure of unlearning and relearning and may create uncert-
ainty. There is a lack of concern about the competencies of

the adopter to perform new roles. Consequently, very
little preservice preparation is included in plans for
change. In addition, there has been virtually no provision
of time, resources and other supports to facilitate the
learning of new roles once the change has been initiated.

d)   There seems to be a misplaced emphasis in the innova-
tive process, in that those affected by the changes
are dependent on the process instead of the process being
dependent on them.

Fullan strongly maintains that effective change will
never occur until the role of the user in the process is
radically altered so that he is intimately involved in all
stages of the innovative process.

From this chapter of the literature review it could
perhaps be appreciated that although many innovative attempts
in education have failed their failures can provide valuable
information. Such information could lead to a better
understanding of why certain changes have failed. Hopefully,
this could pave the way for more widespread, positive and
successful reform.

2.2   Obstacles to Change

It appears that obstacles are often encountered in
the process of change. The variables listed below are seen
to create resistance or problems to change.

2.2.1 The bureaucratic structure of schools

Present organizational arrangements and practiceshave
been seen to produce some dysfunctional consequence in
respect to the need for innovative activities in the
educational establishment. (Abbot,1965; Anderson,1968;
Blau,1956; La Pierre,1965; Owens, 1970; Schoen, 1969).
In the conventional school, teachers are physically separated
in individual classrooms. There are no reliable measures of
their performance, and channels of communication are also
difficult to establish. These characteristics typify an
organization in which work is geographically decentralised,
and where the formally structured channels of communication
are not well developed. Administrators then control

behaviour by rules, with a series of occasional checks to
determine that the rules are being obeyed.

The bureaucratic structure of schools does not usually
include, within its organization, an explicit system or
mechanism for generating, introducing, and institutionall-
izing change. More often than not, it emphasizes the
maintenance of order, rationality and continuity. (Gorton,
1972, p.154). With its hierarchical structure, levels of
graded authority and chain of command, proposed change may
be diluted before it is finally approved. Or it may be
rejected, because it threatens the stability of the institut-
ion. In the hierarchical definition of roles, there is a
tendency to emphasize rights when referring to super-ordinate
roles and obligations when referring to subordinate roles.
Thus subordinates have an obligation to follow channels of
communication, to be deferential in the presence of super-
ordinates, and to wait for official approval before engaging
in innovative activity. Such a system then, favours the
status quo and deters innovation from below. Furthermore,
organizational norms, traditional role functions, vested
interests, faculty attitudes and sheer inertia work to maintain
the status quo, (Bushnell,1971). Miller,(1967,p.13)
pointed out that bureaucracies can, on the other hand, provide
positive approaches and incentives for innovation and change.
This, however, will depend on specific circumstances in
particular situations. Released time for teachers, for
example, is one practical approach to innovation that can
be taken by the central office.

2.2.2 Habit and adaptation

As organizations consist of people, it appears that
instituting changes, be they technological, organizational
or curricular, will require concurrent efforts to change
people. As educational operations are performed by persons
as instruments of change, it becomes necessary to change
basic attitudes when one changes his behaviours or skills.
This would seem to challenge habit, the tendency of people
to behave in the same way as they always have. Coffey (1957,
p.101) points out that the most significant barrier in
institutional change is the resistance which persons express
when such change seems to threaten the roles in which they

have developed considerable security. Joyce (1969, p.20)
refers to the problem that innovations require members to
adjust by learning new behaviours.   "To some extent, all
adjustments that require learning involve some risk of a
feeling of incompetence. In teaching, the risk can be
considerable, particularly because the average school provides
no place where the teacher can develop new competence in
private."   The problem is more complex for the experienced
personnel, because it means not only learning new skills and
behaviours, but possibly eliminating old skills and behaviours
as well (Ryan, 1971, p.383).   Furthermore, internalized attitudes,
behavioural norms, and habit structures are not easily extingu-
ished and replaced (Aronfreed, 1960).   For many experienced
teachers, it would seem that the change to a more sophisticated
use of educational technology will mean revising the way in
which they conceptualize their role as teacher. The rut of
experience as Miller (1967, p.11) points out, can be a strong
deterrent to effective change.

Lippit and his associates (1958), consider that the four
most frequently noted sources of resistance to the idea of
help are: a) a reluctance to admit weaknesses,   b) a fear
of failure or awkwardness in trying to initiate a new practice
or behavioural pattern,   c) a fatalistic expectation of
failure instilled by previous unsuccessful attempts to change,
and   d) a fear of losing some current satisfaction (e.g.
power, dependency and so forth.)

Gorton (1972, p.154) further indentified major barriers,
which may be present in a specific situation, and which will
need to be overcome. In addition to the bureaucractic structure
of schools and habit the following three variables are suggested
by Gorton :

2.2.3 Lack of incentives

Gorton points out, that while the change agent may
personally be convinced of the benefits which will accrue with
the adoption of proposed change, he can seldom guarantee those
benefits or offer incentives (monetary or otherwise) to
persuade others to adopt the innovation. Consequently he is
dependent on his own ability to influence others to adopt a
proposed change, for which there may be personal costs and no

immediate gain. With this lack of incentives for adopting
more efficient instructional or management changes, (Bushnell,
1971, p.105) adopting a particular change can be a difficult
and frustrating experience for the individuals or groups
involved.

2.2.4 Nature of the Innovation

Innovations can vary according to complexity, cost,
compatability with the rest of the school's operation, and
ease of communicability (Rogers, 1962, p.12,124). Some
innovations are, therefore, more difficult to introduce into
a school system than are others.

2.2.5 Teacher and community norms

Teacher and community norms can also act as significant
barriers to innovating in the schools. Evidence indicates
that a teacher may receive disapproval from his colleagues
for adopting an innovation. Besides this, efforts by the
administrator to bring about change in a teacher's role or
methods may be viewed as a challenge to the teacher's profess-
ional autonomy (Smith, 1966). Research has further revealed
that community groups may feel threatened by change because
of its implications for upsetting the stability of the power
relations within the community (Kimbrough, 1965. p.11-25).
Brickell (1961) has written (p.20), "Parents' and citizens'
groups in most communities do not exert a direct influence
on the adoption of new types of instructional programmes, but
their influence is decisive when exerted." Miller (1967,
p.15) points out that in many instances where the community
is said to be a major force inhibiting or resisting change,
one suspects that lack of educational leadership is more
likely the real inhibiting force. It seems that what Brickell
has said about the role of parents and citizens groups in
bringing about change is true; namely, that it is not
necessary to have their active enthusiasm, but it is necessary
to avoid their active opposition. (p.20).

These obstacles to change, are closely related to those
identified in a study of teacher resistance to change conducted
by Eicholz and Rogers (1964, p.299-316). Based on their
findings, they developed a model, shown in Fig: I.

FIGURE I
A Framework for the Identification of Forms of Rejection

Form of Rejection	Cause of Rejection	State of Subject	Anticipated Rejection Responses
Ignorance	Lack of dissemination	Uninformal	"The information is not easily available"
Suspended judgment	Data not logically compelling	Doubtful	"I want to wait and see how good it is before I try."
Situational	Data not materially compelling	1. Comparing 2. Defensive 3. Deprived	1. "Other things are equally good." 2. "The school regulations will not permit it." 3. "It costs too much to use, in time and/or money."
Personal	Data not psychologically compelling	1. Anxious 2. Guilty 3. Alienated (or estranged)	1. "I don't know if I can operate the equipment." 2. "I know I should use them but I don't have time." 3. "These gadgets will never replace a teacher - (If we use these gadgets they might replace us."
Experimental	Present or Past trials	Convinced	"I tried them once and they aren't any good."

Eichholz Gerhard B., and Rogers, Everett M., "Resistance to the Adoption of Audio Visual Aids by Elementary School Teachers: Contrasts and Similarities to Agricultural Innovation" - cited in Miles, 1964, p.310.

This framework presented by Eichholz and Rogers, while concerned with teacher resistance to change, would appear to offer the administrator a generalisable model for anticipating and analyzing resistance to change from other sources as well. This could help the administrator to identify and diagnose a number of the major forms of resistance to change and subsequently to plan steps for vitiating the opposition.

2.3 Factors which Influence the Extent and Speed of Adoption of an Innovation in Education.

2.3.1 Nature of the Educational System.

A succinct analysis of special features of educational institutions, namely schools, and their implications for change is provided by Sieber, (1968). Drawing from earlier work, (Bidwell, 1965; Miles, 1967; Wayland, 1964), he focusses on the following four features:-

a) The schools vulnerability to its social environment. This refers to the influence of the social environment on the organization irrespective of its goals and resources. As a vulnerable and dependent community agency, schools can only make changes so long as they do not conflict with the community's concept of what education should be. Thus innovations supported by the community will most probably be accepted and those opposed may be resisted.

b) The professional self-image of teachers. Sieber maintains that innovations proposed by the administration are often resisted by teachers because they are perceived as encroachments on their autonomy. On the other hand, since teachers may be insecure about their professional status, they may over-comply with regulations thereby minimising the amount of innovation. It is also probable that they may comply by adopting innovations that will enhance their professional self-image.

c) The diffuseness of educational goals. This refers to the lack of clarity and focus on long range goals in schools and may lead to overcompliance with present methods, thus impeding change. But since the effectiveness of new methods is difficult to assess, teachers

may at other times accept them uncritically because of the demands of laymen or educators.

d)   Sieber argues that the need for coordination and control of the clients and employees of the system has potential consequences for innovation. Even slight departures that may necessitate serious organizational adjustments (thereby disrupting normal operations throughout a large sector of the school) may be rejected, or if adopted, only minimally instituted.   Innovations that are not disruptive and contribute to coordination and control may be readily accepted.

Cerych (1969), provides an analysis of the relative slowness of the innovation process within existing educational systems.   This analysis is within the conceptual framework of the variables defined by Rogers (1966),*   and are believed to influence the rate of innovation adoption.

a.   The relative advantage of educational innovations over past solutions can hardly be perceived rapidly. Education is, in the main, a long term process. Usually years must pass before the results of a new teaching method, a new curriculum or a new educational structure can be considered fool-proof.

b.   The problem of compatibility of innovations with the prevailing values of a given educational system is a formid-able one.   This is compounded by the complexity of the educational system, the vague and diffuse nature of its goals, its manifest and latent functions, its role structure and its external as well as its internal linkages.

c.   The divisibility of innovation in education raises a problem. The success of an innovation in an experimental school or college may not be necessarily considered a valid justification for its general adoption. For example, an experimental school may not have taken into account, the 'normal conditions' of the system that it is presumed to represent.   Consequently, the results of the experiment may not be appropriate for generalization.

d.   The complexity of educational innovations. Here, Cerych distinguishes innovations in the organization of education from those in the technology of education. For

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*Please refer to p. 24 for the definition of each of these variables.

For the former, new organizational schemes are generally added
to or superimposed on existing structures. Consequently,
when the new approach is more complicated than the old one,
the innovation can be blamed for the additional confusion.
With technological innovations, the degree to which they can
be easily understood and used varies. But then there is the
problem that technological innovations need to be considerably
integrated with the educational process rather than being
treated merely as technical gadgets.

e)   The problem of the communicability of educational
innovations can be considered as a problem of visibility and
of communication channels.   The poor visibility of educational
innovations is partly related to the nature of the traditional
role behaviour of the participants in educational organizations
and partly to the type of density of the communication
channels.   Keeley. (1968, p.305), points out that attempts to
find out what has been tried in the past, what is being tried
in other areas, and what researched data exist, are extremely
time-consuming tasks.   In addition, the findings are frequently
unfruitful.   This is because the necessary communication
channels do not exist.

All these features appear to have an effect on the
generation of educational innovations, and their subsequent
implementation.

Other observers (Tope, 1965), have stressed varying
aspects of the diversity prevailing in schools and their
possible effects on change.   The low interdependence of
teachers in their work, the low role differentiation among
teachers and their relative role invisibility (since they are
not closely supervised or observed by each other) have been
noted as factors possibly related to change.

Beeby. (1966), discussed the problem of educational
conservatism within the broader analysis of the quality of
education in developing countries.   Noting that many causes
of conservatism are professional, he identifies conditions
which tend to restrain innovations in the schools.   As he
states (p.40), "if teachers were not working in isolation
from their colleagues, as is customary in any given school
or school system, it would matter less about their range of
ability, that so many of them are vague as to the goals of

their craft or fail to grasp the real significance of new methods proposed to them. Again, if teachers were not so deeply conditioned by their own experience as pupils, unsureness and doubt might lead more frequently to experimenting with the new rather than regression to the old. This interlocking of factors produces a pattern of resistance to change that is probably unique."

Such resistance has been suggested to be a 'normal condition'. According to Talcott Parsons (1951), the primary function of most educational systems is the 'pattern maintenace function', i.e. the transmission of existing values. In this respect therefore, innovation in education implies a certain dysfunction, which the system as such will by definition resist.

Simon (1945), sees an educational system from the point of view of organizational theory. As an organization, he believes that it seeks a "satisfying solution rather than an optimum one." It then stops its "search behaviour" once a pattern is found that is considered "reasonably good" or "acceptable".

Although the foregoing coverage may be interpreted as a pessimistic view of the possibilities of innovation in education, it need not be regarded as such. There is increasing public concern for quality education. Numerous research and evaluation centres have been integrated into educational organizations or systems. New curricula, materials, technology, teaching methods and forms of school organization are being researched and developed, disseminated and demonstrated by the innovating institutions. In a sense this implies a significant departure from the norm that educational systems seek a "satisfying solution, rather than an optimum one." Educational organizations are also beginning to apply an organizational device prevalent in industry. These are research and development divisions" deliberately constructed to enable the organization to continue research activity even when most of the organizational members are quite satisfied.....; they tend to define for the organization successively higher levels of satisfaction by raising the standards of what is considered all right. In this way organizations have been able to build in mechanisms to make themselves rationally dissatisfied and to continue to search for improvement." (Etzioni, 1964).

Much of what has been said can perhaps lead to the conclusion that the need is for not just more technological or organizational devices - innovations per se, but for institutional conditions facilitating the innovation process as a whole.

2.3.2 Attributes of innovations

Much attention has been given by diffusion researchers in particular, to identifying attributes to describe innovations. This is on the premise that the attributes of an innovation itself, are basic factors in explaining differences in the rates at which various innovations are adopted (Miles, 1964; Fliegal and Kivlin, 1962). It seems likely that, other things being equal, proposed organizational changes having certain attributes may be more readily instituted than others. Although related empirical research is scarce, an increasing number of empirical verifications of the significant effects of various attributes on rates of adoption of specific innovations offers supportive testimony. (Rogers, 1962; Fliegal and Kivlin, 1966).

The tradition of studying innovations empirically began with anthropologists and shortly after, rural sociologists, medical sociologists and educationists. *

Rogers, in reviewing such earlier work (1962, p.124-134), talks about five conceptually distinct characteristics of innovations. He states that all other terms previously used to describe innovations may be subsumed under these five:-

1)	Relative advantage (the degree to which a new idea is perceived as being better than the idea it supersedes.)
2)	Compatibility (consistency with existing values, past experiences and needs of the adopting unit.)
3)	Complexity (difficulty to understand and use.)
4)	Divisibility (the degree to which the innovation can be divided into parts and/or tried on a limited basis.)
5)	Communicability (the degree to which the results of an innovation are easily observed and communicable to potential adopters.)

* For extensive reviews of the findings of studies in these areas, see Katz, Lewin and Hamilton, (1963); Lionberger, (1964); and Rogers and Shoemaker, (1971). Havelock, (1969, p.8-51), provides a review of many of the intrinsic and extrinsic factors of innovations that are related to change.

Moore and Mizoba, (1969), maintain that what is worthy
of belief and who is worthy of belief are key influences in
the individual's acceptance or rejection of an idea. They
are concerned with the credibility of 'transferring' an
attitude from an innovator to an audience. They contend
that the degree to which the source is acceptable to the
public, is directly related to the adoption of an innovation.
This credibility is related to the qualities inherent in
the innovation as identified by Rogers.

Katz, Lewin and Hamilton, (1963), cite such attributes
of innovations as their cost, profitability, communicability,
the degree of risk involved in acceptance, compatibility, and
pervasiveness. At the same time, they point out that
nobody is quite sure what dimensions of an innovation are
relevant.

Lionberger, (1964), summarised the characteristics of
innovations that influence acceptance rates as: complexity,
utility, initial cost, continuing cost, rate of cost
recovery, compatibility, communicability, relative advantage,
mechanical attraction, saving of time, saving of discomfort,
and divisibility. Varying degrees of support have been
found for most of those factors, with the cost factor being
in greatest dispute. Complexity, compatibility and relative
advantage are being best supported as important factors.

Fliegal and Kivlin, (1966), in their rural sociology
study of attributes of innovations as factors in diffusion
selected fifteen attributes from their survey of the
literature. The attributes, similar to those cited by
Lionberger included initial cost, rate of cost recovery,
payoff, social approval, saving of time, saving of discom-
fort, regularity of reward, divisibility for trial,
complexity, clarity of results, compatibility, association
with dairying, mechanical attraction, and pervasiveness.

Brickell, (1969, p.292), identifies the characteristic
of 'cost' along with some characteristics similar to those
already identified by other researchers. This consists of
initial installation and continuing costs. He further
identifies administration and faculty attitudes as being
relevant factors in accepting an innovation, (p.300).

In _Innovation in Education_, Miles, (1964), highlights
the possible special relevance of a number of attributes of
innovations for schools. He notes for example, that an
innovation cost may be more important as an attribute affect-
ing rates of change in schools, than in other organizational
settings. Without good measures of output, and the presence
of vague possible rewards, educational organizations tend to
stress costs and their reduction as the basis for justifying
adoption of innovations. Secondly, an innovation's
divisibility may be a more important variable influencing
rates of change in schools than in other types of organizations,
since highly divisible innovations may make cost a less formid-
able obstacle. Thirdly, innovations associated with materials,
(e.g. new maths materials) are more likely to be adopted by
schools since they can be altered to fit the demands of
teaching situations and be easily reproduced and distributed.
They also retain substantial integrity of original meaning
when used by a wide variety of teachers in different situations.

Unfortunately, as Miles pointed out, there is a paucity
of empirical study of actual relations between attributes of
organizational innovations and their influence on the speed
and degree to which schools change. Much of the literature
is basically atheoretical in nature. It has been argued
"that much detailed work remains to be done to determine
which attributes are relevant under given circumstances."
(Fliegal and Kivlin, 1966, p.237). It would seem that
future research is needed to show whether the attributes of
innovations predict different rates of organizational change.

2.3.3 Models of the innovation process

There appears to be no lack of recommendations to
improve educational programmes, (Hillson and Hyman, 1971).
However, there still remains for the administrator the
problem of how to evaluate the recommendations and to bring
about change successfully in his school or school district
(Gorton, 1972).

The model of change relevant to this study is shown in
Figure II. It draws closely on the conceptualization of
Maguire, (1970), in his observation and analysis of the
literature on change. The model based on a time dimension,

FIGURE II   MODEL OF INNOVATION PROCESS

                                    Stage

                                    1   Inception of Idea and Initial
                                        Considerations

                                    2   Testing of Proposed Change,
                                        Evaluation, Development.
                                                                        Developmental
                                                                        phase
Organizational Contextual
Setting -   factors -
                            training 3 Dissemination and Orienting
regarded as   dimensions adminis.   the Relevant Groups as well   1. Rational-
bureaucratic   that will   finance   as Gaining of Support   empirical
in nature,   influence   attitudes
within which   the whole   research   2. Power-
the process of process   communic-4 Decisions About Introducing   coercive
innovation takes   ations   the Proposed Change
place, and the   informa-   3. Normative -
characteristics   tion   reeducative
of which may   politics 5 Planning a Program of Implementation
affect the   4. Combination
process   of any or
                                                   Implementation   all of the
                                     6 Implement the Proposed Innovation phase   above

                                     7 Conduct In-Process Innovation

                                     8 Modify, Refine and Institutionalize
                                        the Innovation

With an appreciation of models of innovation by Chin, the Center of Educational
Research and Innovation for the workshop held at St. Johns College, Cambridge,
and the stages noted by Maguire, (1970), in her observation and analysis of the
literature on change, the following is proposed as a working model which may serve
as a check list for innovations.

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begins with the inception of an idea and identification of the need for change. It ends with the institutionalization of the proposed innovation. The model assumes that it is possible to identify steps in the process and to plan the process. There are also contextual factors which may play a part at each stage. These are dimensions that will influence the whole process. Training of personnel, for example, has to do with training of teachers, planners and research workers. It also means that changes have to come about in training programmes (CERI, p.21). Throughout the process, there is an emphasis on decision-making, planning, organizing and evaluating.

The stages of the model are as follows:

Stage 1 - Inception of idea and initial considerations.

It is perhaps difficult to determine where innovation, in the sense of the generation of new ideas and techniques, occurs in education. Many innovations may occur at the classroom level. Although one does not wish to underestimate the innovativeness of individual teachers, it would seem that innovations tend to be systemised and developed outside the school, before they become the objects of diffusion. Thus, Griffiths, (1964), includes as two of his propositions relating to change, 'the major impetus for change in organizations is from the outside', And, 'when change in an organization does occur, it will tend to occur from the top down, not from the bottom up.'

The initial considerations would be concerned with identifying the need for change of the particular system. This would be through examining the present system to ascertain which aspects need to be or can be removed.

Stage 2 - Testing of proposed change, evaluation, development.

The proposed change would be subjected to testing and evaluated to determine its effectiveness over present practices. Subsequently, it would be developed so that the new approach would replace the former method.

Stage 3 - Dissemination and orienting the relevant group as well as gaining of support.

The relevant group would be those who will be affected by the innovation, e.g. teachers, the faculty. This stage

would be involved in creating in the relevant group an
awareness of and interest in the proposed innovation.
The group is best seen to be able to participate in
discussions about the innovation. These could be in
examining the strengths and weaknesses of the proposed
change, in identifying the commitment which will need to
be made in terms of additional resources, in-service
training programmes, and/or building modifications.

Stage 4 - Decisions about introducing the proposed change.

This stage would involve identifying those who should
participate in the decision. Subsequently, it would be
concerned with the process by which the decision would be
made, and whether to proceed with the implementation of
the proposed change.

Stage 5 - Planning a programme of implementation.

This would involve planning and administering a
programme of in-service education for those involved in
the proposed change. The resources and facilities necessary
for successfully introducing the change would need to be
provided. Subsequently, the concern would be on anticipating
and attempting to resolve in advance the operational problems
which may be encountered in implementing the proposed
innovation.

Stage 6 - Implementing the proposed innovation.

Stage 7 - Conduct in-process evaluation.

Here, a system to provide feedback on the extent
to which the proposed change is accomplishing its
objectives would be instituted. Subsequently, those aspects
of the programme or its implementation which need improvement
would be diagnosed.

Stage 8 - Modify, refine, and institutionalize the
innovation.

This would involve modifying and refining the innova-
tion, and, if necessary, providing additional orientation,
training, resources, facilities and the like. It would
then need to be accepted (if it is successful) as a regular
and permanent part of the total educational programme, in
the school or school district.

It is believed that the administrator who adopts the process outlined, would increase his likelihood of successfully introducing and institutionalizing a proposed change in his school or school district.

Hetzel and Barnard (1973), advocate a process of motivating people for effective change. They feel that the failure of changes in programme structure and methodology rests not in the merit of their content, but rather in the process used to implement them. There appears to be an absence of concern for motivating the people charged with the responsibility for making them work.

The five steps they propose are:

a.   An awareness of the need for change.

This is seen to be achieved through the use of group consensus and individual interviews.

b.   Identification with need and problem ownership.

This step is to have the staff identify with the need accept ownership of the problem, and secure commitment for solving it. This would involve participation of the staff members with the leader on discussions about the problem and its solution.   In this way, the individual can accept the problem at a personal level.

c.   The generation of solutions, selecting goals, and assuming of responsibility with freedom.

It seems that once people have ownership and commitment, they will naturally seek to solve the problems which confront them. After the needs assessment is completed, the goal to work toward should be stated and understood by all concerned. "Feelings of achievement or self-accomplishment can be harnessed productively, when the participants in an organization have a clear conception of one another's goals." (Schmuck and Runkel, 1970, p.31). After goal selection, and after all alternatives have been studied, a potential solution would be selected. By having the staff select the possible solution within the given constraints of time, space, personnel, finances, and curriculum, the responsibility to resolve the problem rests then with the staff. This responsibility adds to their feeling of importance, effort is greater and morale is higher because there is direct and real

involvement. After identifying the solution and assuming responsibility, the implementors should be given the freedom to fulfill the responsibility assumed.

d.   Evaluation and closure by staff and leader.

Evaluation serves to asses the results of the efforts as they relate to the problem, and to provide the conclusion.

e.   Ensuring that recognition/reward is provided.

McGregor (1960) pointed out, that commitment to objectives (and future endeavours), is a function of the rewards associated with their achievement. The strategy is to publicize the achievement or staff efforts at every opportunity within the institution and within the community. This recognition will make staff members feel that they are satisfied with their efforts, that the task was worthwhile, and that they are worthy members of the profession. Ryan (1971), suggests that although the use of instructional technology must be intrinsically rewarding, the development of a high level of technology in the school will require the use of special rewards. This could be special recognition in the form of national awards, money prizes and public acknowledgements.

In summary, Kirkpatrick (1969, p.1) defines motivation as "creating a climate in which a person will want to do his best." The authors believe that the process provided does create this type of climate and the mutual respect necessary for the innovation to occur.

Giacquinta (1973), in his review of the literature on change, proposed in regard to organizational change that an attempt to change a school organizationally, when successful, proceeds in three basic stages: initiation, implementation and incorporation. Initiation is characterised by activities such as defining the problem to be solved, specifying various possible solutions, and adopting one of the innovations. This process when successful, leads to the introduction of organizational innovations. Implementation is the process that, when successful, results in the alteration of organizational members' behaviour and attitudes, so that they conform to the expectations of the innovation. Incorporation is the process leading to the

stabilization or routinization of the new behaviour, so that
the innovation becomes a regular part of the school's organiz-
ation.

Similar or related conceptions of the process of
organizational change are proposed by Gross et al, (1971);
Hage and Aiken, (1970); Lewin, (1952); and Schein, (1961).

Miller, (1967), suggests that inadequate knowledge
about the process of change can be a major obstacle to
better education. He also points out that inadequate teacher
education programmes with their lack of concern on problem
solving, critical thinking, and the importance of the process
of change, can be an inhibiting force. There appears to be a
need for educators with special skills in organizational
analysis, and in planning for change.

2.3.4 Strategies of introducing innovations

A number of studies have suggested different strategies
for introducing innovations, and the conditions necessary
for their effective operation. Articles advocating specific
strategies of educational change are extensive. There are
however, many summaries of the existing literature. *

Any given strategy may be seen as the means by which
a proposed innovation becomes instituted in an on-going
educational system for which it was planned. The proposition
is that the way in which innovations are introduced affects
the speed and degree of their institution in schools.

There have been several independent attempts to develop
a typology of change strategies. These reveal a high degree
of consensus. Their comparative terminologies are as shown
in Figure III. *1.

*Bhola, (1965); Chin and Benne, (1969), Guba, (1957); Havelock,
(1971), and Maguire, (1970), have presented reasonably short
summaries. Havelock, (1969), contains an extensive review of
the literature. Rogers and Shoemaker, (1971), present empirical
and therefore theoretical issues in the field of the diffusion
innovations.

*I.Chin, (1967), has suggested the similarity between these
typologies. Discussions appear in Chin, (1967), Miles, (1965),
and Walton, (1965). Garth Jones typology is based upon Etzioni's,
(1961), model of complex organizations.

FIGURE III

CHIN	JONES	MILES	WALTON
Power-Coercive	Coercive	Power-solution	Power
Normative-re-educative	Normative	Relationship-attitude	Love-trusting
Rational-empirical	Utilization	Problem-process	Problem-solving

The implications of these strategies of change will be briefly examined here. Chin's terms will be used for the sake of consistency.

• Power-Coercive

Strictly speaking, all the three strategies under discussion are power strategies differing only in the manner of their use. Goldhamer and Shils (1939), write: "a person may be said to have power to the extent that he influences the behaviour of others in accordance with his own intentions." But here, the concern is use of that form of power which ultimately has coercion as its legitimate sanction. Thus change occurs because of the legitimate power or authority of the superordinate to coerce the subordinate to conform.

• Normative-re-educative

This strategy attempts to get people to use the advocated change by establishing a new moral imperative. It is concerned with changing people - their perception, attitudes, values, skills, role relationship behaviours, by means of group techniques as T-groups.

• Rational-empirical

The terminology by Chin, Miles and Walton suggests, that at the centre of this change strategy is the concern of all parties to resolve a particular problem. The assumption is that men, being rational, will duly adopt an innovation which is demonstrated to be more effective than existing practice. The emphasis here is on research, development and dissemination.

In a recent review of the literature on change, Giacquinta (1973) detected two broad strategies -
(a) The strategy stressing knowledge and understanding maintains that organizational change in schools is a function of the extent to which their personnel gain awareness and understanding of innovations (see Eidell and Kitchell, 1968). Thus, given new ideas about organizational goals and procedures, the greater the exposure among school personnel, the greater will be its frequency of institution. The use of tactics or notions exemplifying this strategy has included that of change agents, delivery systems, demonstration projects, in-service workshops, knowledge utilisation, linking roles and target systems.

(b) The strategy emphasizing commitment maintains that the greater the commitment or desire on the part of school personnel to effect change, the greater the change that may be expected. As innovating is seldom a solo operation, it seems that the commitment of a group must be achieved early in the process to sustain morale during the process. Tactics that are often used and widely discussed in the literature include group problem solving, intra-organizational feedback, sensitivity training and T-group experiences.

There are studies which view strategies as being adequate only when they are designed to foster commitment as well as knowledge and understanding (Guba, 1968; Watson, 1967b). * The underlying principles behind the strategies presuppose the participation of subordinates with their superiors in organizational decision-making, especially that related to changing the organization.

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*"Organization Development" (OD) is the most advanced example of the combination of many of the tactics associated with both of these underlying explanations. OD refers to the built-in process whereby an organization can diagnose and improve its own functioning. Schmuck and Miles (1971) have recently edited a volume on OD. Cited in Giacquinta, 1973, p. 185.

This participation is seen as necessary throughout the attempt at change by some advocates (Benne and Birnbaum, 1960; Dufay, 1966; Oliver, 1965; Trump, 1967). Others emphasise its importance at the stage when the need for innovating is established (National Elementary Principal editors, 1961), when various change proposals are considered (Dentler, 1964), when a particular proposal is finally adopted (Byerly and Rankin, 1967), or when the strategy for implementation is developed and carried out (Rocky Mountain Study Council, 1967). Some argue that participation leads to the reduction of resistance (Argyris, 1962), to the avoidance of resistance (Wigren, 1967), or to the creation of commitment (Goodlad and Anderson, 1963). This comes about by providing greater clarity and understanding of the need for the change (Anderson, 1964; Bennis, 1966). Participation of personnel is taken to be the sine qua non of organizational change, characterized as a "general law of innovation" (Havelock, 1969).

Efforts to demonstrate the effects of participation date back to the work of Lewin and his associates (1952). A series of experiments was conducted to determine the impact of group discussion verus lecture on changes in mothers' uses of certain kinds of foods: beef hearts, sweetbreads, kidneys, fresh milk, evaporated milk, cod liver oil, and orange juice. The survey indicated that women who participated in group discussions reported greater use of these foods than those who heard lectures. Other studies which focussed on the effects of participation strategies in organizations include those of Katz, Maccoby and Morse, (1950), Morse and Reimer (1956), in an industrial setting; Lippitt and White (1952), in an educational setting; and Worthy (1950), in a business setting. They specifically report the impact of greater decision making by subordinates on changes in organizational morale, productivity or both. But then the research evidence was seen to have serious conceptual and methodological ambiguities (Leavitt, 1965). Only a limited number of articles report

the effectiveness of introducing change using strategies
of participation as compared to introducing change from
the top by superordinates without participation by
subordinates (e.g. Coch and French, 1948; French, Isreal,
and Dagfinn, 1960; Greiner, 1967b; Haller, n.d.). The
evidence fails to demonstrate the extent to which
strategies of participation affect the process as compared
with strategies of imposition from the top. It also fails
to examine the reasons for expecting such relations.
Moreover, it is often difficult to compare studies because
their definitions of participation are unclear or varied
(Vroom, 1960).

Giacquinta (1973, p.189), further points out that
there are cogent reasons for believing that strategies
involving subordinate participation can lead to conflicting
demands, exacerbation or differences among members,
greater reluctance to try change and thus less effective-
ness. Moreover, both the attributes of an innovation
introduced by a given strategy and the characteristics
of organizational members exposed to the strategy may
influence its effectiveness. Yet, these conditions have
not been taken into account. Until researchers do
comparative studies and adhere to sound basic research
procedures, it seems that the effects of different
strategies of change on the process of organizational
change in schools remain open to question.

In considering strategies for change, perhaps an
important point is that an innovational strategy which
succeeds with one system may need to be modified if it
is to succeed with another. This is because not all
educational systems are identical with each other, and
it seems that account needs to be taken of the relevant
differences between them. A relevant point here, is
mentioned by Sarason (1971). He points out a character-
istic of the process of change related to the rational-
empirical strategy.

This is the assumption that since a particular innovation "is considered as an improvement over what exists, it should be spread as wide as possible as soon as possible." (p.213). According to Sarason, this strategy will not work because schools will respond differently according to existing conditions. Consequently, plans for change have not and probably cannot cope with the problems of implementation in a large number of schools simultaneously. In addition, this top-down strategy negates the legitimacy of a "diversity of alternatives." Different user groups or schools may have different objectives or priorities at any given point in time. As Mangione (1970) emphasizes, no clear blueprint strategy or process exists which can be applied successfully in all situations. There are various models and strategies from which a potential change agent can extract ideas which may be appropriate for his particular situation.

2.3.5   Personal characteristics of organizational members

The personal characteristics of organizational members is another set of factors that appear to have important effects on the process of change in schools. Although Rogers (1965), provides one list of the characteristics of innovators, the three attributes which Giacquinta (1973), identifies seem more appropriate for the purpose of this study. These are the understanding organizational members have of the innovation; their ability to exhibit new attitudes, values and behaviour required; and willingness to make the necessary efforts.

Brickell (1964), discusses these factors and their importance in relation to the willingness of the members of an organization to change attitudes, values and behaviour. He also alludes to an apparently important sub-process in organizational change; adult socialization (Brim, 1968; Brim and Wheeler, 1966). Although some organizational changes may require little change in habit or attitude,

consideration of innovations such as open classroom and decentralisation suggests that many changes in schools do require changes in people. Changing basic habits and attitudes in order to make members capable of performing new roles is one kind of adult socialization (or retraining, as it is sometimes referred to in the educational literature). If willingness, understanding, and the ability of organizational members are key personal factors influencing change, and if these personal conditions are in large part a consequence of resocialization, then organizational change becomes determined, in part, by how well the conditions in the organization promote this sub-process. In short, a firm rationale exists for expecting a strong relation between degree of resocialization of organizational members and the organizational change that will take place in schools. (Giacquinta, 1973, p.192).

New educational programmes indicate the use of in-service workshops for teachers and administrators, often involving T-group experience or sentivity training. * Such activities are proposed to "impart" the appropriate knowledge, attitudes, values, and skills to those taking part in the change. Their frequent mention in the literature connection with new programmes seem to attest to the faith of educators in the three personal conditions of school staff members in shaping the change process.

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*Argyris, (1964); Schein and Bennis,(1965); provide a review of the effects of T-groups on organizational change. A critique of the position is offered by Katz and Kahn, (1966, p.390-451).

2.3.6 The organizational setting

An important but often overlooked aspect of what is being said and done about planned change, is the notion that any planned change effort is deeply conditioned by the state of the system in which it takes place, (Miles, 1969). For example, in Everett Rogers' excellent compendium, a good deal of attention is paid to the innovator and to why an individual adopts an innovation. Less attention is given tp the organizational setting in which the innovation takes place. Most of the strategies examined by Bennis also centre on the individual as the locus of power, and give little consideration to the significance of the organization.

For an innovation to succeed, it seems reasonable to assume that specific account be taken of the system which is to be changed.

The standard conditions for organizational change which Jones, (1969), identifies are: 1) an atmosphere of freedom which encourages thoughtful experimentation; 2) an organizational hierarchy which not only values competence but also assumes it in all staff members; 3) an organization in which decisions are made as close to the operational level as is possible.

An orientation in a local authority towards control of activity, economic pay-off, or towards formality in interpersonal or inter-institutional relationships, is likely to have a negative effect on innovation (Rosner, 1968).

Kimbrough and Todd, (1967), felt that bureaucratic structures restraining innovations should be altered, or new systems be created, if organizations are to become creative. In initiating such changes, their suggestions include: - effective communication for development and clarification of relevant ideas, pluralism and collegial relations in decision-making, decentralised administrative activities where possible, development of a balance between personal and institutional goals, and effective participation of schools leaders in the external social system.

Most of the change literature (e.g. Novotney, 1971), suggests that potential implementors are more likely to adopt a new idea if the change agent is someone they trust. It is suggested that teachers trust teachers more than they do either principals or administrators. Hence they are more likely to adopt another teacher's idea. This trust dimension can also be reinterpreted in terms of information characteristics. A teacher acting as a change agent is more likely to present a new idea to another teacher in a context that makes the idea more relevant to the perceived needs of the teacher-client than is the principal or administrator. The teacher-agent probably is better able to diagnose (perhaps intuitively) the relevant cognitive structures possessed by the teacher-client since they are more closely aligned with his own. Thus horizontal communication among colleagues appears to have a certain clarity. This may be explained partly in terms of cognitive variables, and partly in terms of affective variables related to what Rogers, (1962), calls "personal influence."

Miles, (1965), focusses attention on organizational dynamics with the suggestion that the state of health of the educational organization can tell us more than anything else about the probable success of any particular change effort. He has listed some of the criteria of what he terms 'organizational health'. These are goal focus, communication adequacy, optimal power equalization, (between subordinates and super-ordinates), resource utilization (technical and human), cohesiveness, morale, innovativeness, autonomy, adaptibility and problem-solving adequacy (appropriate techniques for handling the conflicts which inevitably arise in any organization). He notes that innovations are unlikely to be effectively adopted in schools if the school's organizational health is such that it is not receptive to innovation.

A climate conducive for change has been seen as fundamental for an innovation to take place. Leith, Wood and Russell, (1973), suggest that this occurs when the characteristics (complexity, amount, type) of the innovative

information presented by the change agent matches the characteristics of the change client's cognitive structures in a way that generates interest. Wood, (1973), advocates that alclimate conducive for change, creates a press by teachers and principals to seek better ways of educating young people. There is, they feel, a psychological tone which promotes open communication and a willingness to take risks.

In identifying the characteristics of a desirable school climate, the results of studies by Gross and Herriott, (1965), Halpin, (1967); and Stern, (1950); indicate that teachers and administrators are most likely to feel secure enough to experiment in those situations where

a)   they believe that they can create new programmes and strategies which will improve the quality of education in their schools;

b)   they and the board of education have a feeling of mutual trust and understanding;

c)   they believe that they will receive psychological and financial support for their efforts to develop, implement and evaluate innovative programmes;

d)   they believe that it is more important to seek better ways of educating young people than to be absolutely sure that what they try will be successful;

e)   they have a commitment to, and an understanding of the long-range goals for their school;

f)   they feel free to communicate openly with each other about their concerns, beliefs and ideas.

Schoen, (1969), suggests that significant technological innovation takes place in organizations, when top management is firmly committed to the goal and is involved in the process.

The functions of the leadership behaviour of the head teacher in creating an innovative climate can be inferred from several research reports (e.g. Gross and Herriott, 1965; Halpin, 1966). The principal is seen as being the member of the system in the best position to initiate change in his school, (Novotney, 1971; Russell, Leithwood,

and Baxter, in press).

It is felt that the administrator and his chief subordinates are the determiners of what, when, and how fast change will take place in a given organization. As Ryan, (1971), points out, without the support and involvement of the administrator, whether he be dean of the school of education or principal of a small elementary school, a major portion of the incentive needed for change will be lacking. How the administrator functions in relation to personnel and knowledge is seen to determine the kinds and degree of change that will take place in his school.

2.4 The relevance of perception to the adoption of an innovation

"Everyone and no one can define an 'innovation'. This is because what is innovative is in the eye of the beholder. If a person has seen, heard or tried something, it is no longer new to him. An innovation then, is something that is perceived as new by an individual at any given time in any community." (Hearn, 1972, p.358). This view points to the significance of perception in relation to the adoption of an innovation, which according to Evans, (1967), is fundamentally an individual decision. Coffey and Golden, (1957), point out that those concerned with change must not overlook the needs of the individual whether he is the teacher or the administrator. He must seen change as satisfying some of his needs, and that he is able to make the change. The proposed change must be perceived as being helpful to him. Coffey and Golden advocate (p.100), that "the process of psycho-therapeutic change comes about under conditions where the perceived needs of the patient are made the focus of attention, where the threats to one's perceptions are reduced, and where the relationship of therapist and patient are mutually collaborative. These are aspects of changed situations which can be generalized to any situation. "

It is generally accepted that perceiving is now considered as part of all conscious behaviour and is recognized as the first step in any learning act, (Smith, 1969). Bruner, (1958), suggests that perceiving an object or event is an act of mentally categorizing. The categories into which objects and events are sorted for identification are learned in a particular culture and linguistic community, or are developed to meet personal needs.

Cantril, (1957), suggests three major emphases in the study of perception which enlarges on Bruner's idea of categorization. First, one's perceptions depend in large part on the assumptions one brings to a particular occasion. Second, they are learned in

terms of one's purposes. Third, they are largely a matter of weighing probabilities concerning the significance or meaning of the world "out there."

As an individual experiences an infinite variety and confusion of stimuli since the world he inhabits is not static, he attempts to impose a structure upon them. Constancies are created to combat uncertainty so that the significance or meaning of various sensory cues can be predicted. People then, tend to select from the various stimuli in terms of their assumptions, and give meaning to what they select in terms of their assumptions, needs and purposes. Thus, it seems that what one perceives is in large measure what one creates.

Leibowitz, (1965, p.3), feels it is not unreasonable to assume that one of the goals and purposes of perception is to stabilize an individual's awareness of the world about him in the interest of successful adjustment. On perceptual selectivity, he explains (1965, p.28), how one can select from a variety of stimuli those which one "chooses" to permit to enter awareness. This selective process is not confined to stimulation of the sense organs. One can also think about events that may take place in the future. Selective perception then, can be seen to determine what one is aware of at the moment.

As Enns, (1966, p.25), states: "Almost everything an individual does, he does in response to his perception of the situation in which he finds himself."

With regard to an innovation, it doesn't appear to matter whether or not an innovation is in fact better or worse than the idea or the thing it replaces. What does seem to matter is whether or, not the individual perceives it to be better or worse. Leithwood and Russell, (1973, p.12) points out that all information can be described in terms of the relative proportion that is perceived by the potential implementor as being familiar and readily assimilable into

existing cognitive structures as compared with the
proportion that is perceived as being unfamiliar and
requiring cognitive accommodation. They suggest that
too great a proportion of readily assimilable information
leads to a rejection of the innovation on the grounds that
there is nothing new in the idea. Too great a proportion
of novel information, necessitating excessive accommodation,
causes a 'resistance' to change. This is because the
innovation has not acquired meaning in the implementor's
frame of reference, or it is mistrusted, or the potential
implementer is not motivated to try to understand it.

Rogers, (1962), when comparising profitability, rate
of adoption, and interaction effect for hybrid seed corn
came to the conclusion ".....that profitability is not
related to rate of adoption, but that the interaction
effect is". He further states that, "This finding
suggests it is not objective profitability but rather the
adopter's perception of profitability that determine the
rate of adoption." Rogers and Shoemaker, (1971), suggest
that the five attributes of an innovation which they
identified as having an effect on successful adoption, were
to be interpreted as if perceived by users.

It seems reasonable to conclude that perception can
be taken to have a significant effect on whether an
individual adopts or rejects a proposed innovation.

CHAPTER III

THE CASE STUDY

Introduction - the background

The Christchurch Teachers' College within which
this study was carried out, consists of the primary as
well as the secondary divisions. The two divisions
are administratively under the controlling authority of
the College Council. They function independently and
are seen as separate, as two distinct Colleges.

As each of the divisions is itself an independent
organization, the focus of the study viewed within the
context of either of the divisions would seem adequate.
Consequently, the study was conducted in the primary
division.

Equipment enabling the use of television in teacher
training was made available to the College in May, 1971.
However, interest in the use of television had found
expression in several ways prior to this date.

In 1965, the College conducted a four-day demonstration
programme of CCTV. This was for the most part designed to
explore the possibility of the medium for teaching a wide
range of subjects both to pupils from the primary and
secondary school classes as well as to special audienced (e.g.
parents of deaf children). The demonstration prompted a
re-examination of the place of television in education and
caused the College to look searchingly at its own present
methods and its plans for the future. The general
conclusion was that ".....Television holds the prospect of
a major advance in the effectiveness of teaching in this
country." (Commission on Education, 1962, p.352). It
was also felt that there was an important place for CCTV
in teacher training, but not at that date in the schools.

In 1969 and 1970, the College made applications to
the Education Department for static and portable video-
tape equipment for use in teacher training.   Its support-
ing justifications included reports of practices with
video-tape recording in teacher education done overseas,
particularly in the United Kingdom and the United States.
These indicated two primary uses of video-tapes:
(a) as a substitute for classroom observation, and
(b) as a record of student teaching performance.
Furthermore, Mr C.J.Wright, Principal Lecturer in
Education in the primary division, who was in the United
States at the time, was sending back reports of television
equipment and its more successful uses in teacher training.
These were particularly in the micro-teaching application.

Towards the latter part of 1970, the Education
Department agreed to provide static and mobile van units
to the College as a pilot scheme.   The College was
assigned the task of experimenting and evaluating the
potentialities and suitability of CCTV as an aid in
teacher training.   Subsequently, its implementation on
a national scale may be planned for.

In June 1971, the mobile and static units arrived in
the Primary Division.   Both the Primary and Secondary
Divisions were provided with a static unit each, consisting
of the video tape recording camera and monitor.   The
mobile van (VTR, two camera system with editing facilities)
is shared by the two divisions.   This mobile unit allowed
for the taping of practical classroom activities showing
both skilled teachers and students at work.   The tapes
can then be played at the College with subsequent evaluation
and discussion of the performances of teachers and students.
Particular sections of a lesson can be highlighted, and
tapes can also be used to lecture large groups of students.

The mobile van, lacking some basic components and
without expert staff, was little used until the third term
of the year.   The static unit was operated under minimal

conditions during the year, due to the late
delivery of some required equipment and the lack
of suitable accommodation.   In January 1972, a
room was modified for the use of the static unit
and the remaining necessary components were
supplied.

An interim report was drawn up in February,
1972.   This provided an evaluation of the usefulness
of the video-tape equipment for the limited time
that it has been used.   (Appendix I).

It may be inferred that experiences
gathered here would have implications for other
colleges planning to incorporate CCTV in their
education programmes.

CHAPTER IV

Research Design

4.1 To determine the regular, non-regular and non-users for the study.

The participants for the study consisted of a
population of lecturing staff which were limited
according to the following criteria :-

a)   that they were full-time
b)   that they were on the staff since the introduction
      of CCTV at the College
c)   that they were in regular attendance during the
      academic terms.

As the study involves experiences and awareness
relating to the innovation, it seems that the limitation
was necessary.   This was with the consideration that the
staff included people who were not full-time lecturers,
people new to the staff, and people who had to be absent
from regular attendance (e.g. due to illness, absence
overseas, or out of Christchurch.)   It was felt that
these members may have a relative lack of experience or
awareness of the particular aspects involved in the study,
as compared with the other staff.

The defined population of 28 users and 15 non-users
was established with the assistance of the heads of the
various departments.   Heads of departments indicated the
particular members in their departments who were not
participants in the study, according to the criteria
stated.   To determine the regular and non-regular users,
it was first necessary to find out the total hours of
usage made by the twenty-eight users individually.   Thus
reference was made to the College record of bookings for
use of both the mobile and static CCTV units.   This record

indicated the day, date and hours for which the equipment was booked by the particular staff member/s, or the department, for the period under study. * It thus became feasible to tally the total hours of usage and subsequently to determine the regular and non-regular users.

However, information drawn from the booking sheets had some limitations. These were: -

(i)   the bookings made in a department's name do not indicate the actual person/s who will use the equipment;

(ii)   the bookings made in a staff member's name do not indicate whether: (a) he will be using the equipment by himself or with colleagues (the names of whom are not shown on the sheets);

(b) an individual made the booking under his name for someone else;

(c) the booking was made, and the equipment was not used subsequently.

To check on these limitations, the staff members were first approached individually. In the case where the name of the department was indicated on the booking record, the head of the department concerned arranged for the relevant staff member/s to be contacted.

It was found that there were two cases whereby bookings were made by a particular staff member but the equipment was being used concurrently by his colleagues. In this instance it was agreed with the staff member that the names of his colleagues would be noted with the same number of hours for which the booking was made. There were also two cases when the period recorded in the booking by a particular individual was actually shared between colleagues who took turns to use the equipment. To obtain as near an accurate

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*   This period covers the beginning of the 1973 academic year in February up till the time that the study was conducted in July.   Although the mobile and static units arrived in the primary division in June 1971, its operation was relatively minimal till February, 1972. (See page 47).   Thus, the period under study may be seen to be adequate for the information sought, as the equipment has been in operation for a year.

TABLE I

THE MEAN HOURS OF USAGE

Hours of
Individual
Usage

x	f	fx
40	1	40
39	1	39
37	1	37
31	2	62
29	2	58
23	1	23
22	1	22
20	2	40
19	4	76
14	1	14
13	1	13
10	2	20
9	2	18
6	1	6
4	2	8
2	2	4
1	2	2
TOTAL :	28	TOTAL : 482

$$\overline{X} = \frac{\Sigma fx}{\Sigma f}$$

$$= \frac{482}{28}$$

$$= 17.214$$

estimation as possible, it was decided with the staff member that the number of hours would be divided between the number of colleagues who had used the equipment.

Table I shows the total hours of usage (ranging from 1 - 40 hours) for which the bookings were made by individual members. The mean hours of usage was calculated, as presented in the Table. Following this, the staff members with hours of usage above the mean (i.e. 17.2) were classified as regular users. The non-regular users were those with hours of usage below the mean.

Each of these members were referred to by a code number. This was to avoid using names, thereby maintaining confidentiality. Thus numbers 1 - 15 were given to each of the regular users: 16 - 28 to the non-regular users; and 29 - 43 to the non-users. These three groups provided the basis on which data for the investigation was obtained.

4.2   Procedures for data collection -

Questionnaire I

As a preliminary to the questionnaire, a semi-structured interview schedule was administered to the regular, non-regular and non-users. This interview sought to investigate the difficulties or problems experienced in relation to the usage of the innovation, and those which may have discouraged or prevented its usage. The format of the schedule is shown in Appendix II.

The questions were designed to be open and subjective in nature. This was intended as a precaution against influencing the subject to feel or infer that certain problems existed.

An economical time procedure was used by interviewing the participants in groups determined by their similar hours of usage. (See Appendix III).

A pilot test was carried out with similar staff at the Secondary Division of the College. This allowed the interviewer experience in interviewing and to negate any practice effects for the actual interview. It also provided the opportunity to test the suitability of the interview format for the information desired.

From the problems identified in the interview, a list was drawn up. This list formed the context of Questionnaire I. (Appendix IV).

The subjects were required to rate the problems listed according to the extent to which they had been personally experienced. A four-point rating scale of Great Deal, Much, Not Very Much and None was used to obtain their responses.

Questionnaire II

Questionnaire II (Appendix V), is a follow up to the first questionnaire. While experience of difficulties or problems associated with the use of CCTV had been studied by means of the interview and questionnaire I, this questionnaire sought to obtain a further measure. It investigated the extent to which subjects perceive the relevance of a list of variables in relation to which CCTV has been used by the College staff as a whole. This is on the premise that the variables have been suggested in the literature to influence the process of change by promoting or hindering the adoption of an innovation.

Determining the list of variables

The list of variables are drawn up mainly from the literature. They are, however, limited to considerations referring to the case study. As demand for the provision of CCTV equipment was made through the concerted efforts of the College members, it seems appropriate to infer that a climate for change (as opposed to resistance) existed. Accordingly, the variables were worded as facilitating factors promoting adoption. They generally represent a particular point without including specific details. This was done with the awareness that the subjects are the non-users as well as those who have used the equipment regularly and less regularly. It seems reasonable to assume then, that the former are not in the same position to be sufficiently familiar to perceive particular details about the innovation. To illustrate, take a variable on the actual tactics used by the personnel concerned to get the innovation implemented. It seems probable that the staff members who use the equipment regularly would be more familiar with these, and thus able to perceive more clearly the general reaction to it. On the other hand , the non-regular users would be in a lesser position to perceive this (as are the non-users when compared with them.) It seems adequate, for the purposes of this study, that the variables represent general concepts. This allows for subsequent studies to probe into further details about any significant point that may arise from the study.

The list of variables covers two broad areas. Attributes of the innovation constitutes the first area. The second area is concerned with the organizational setting and the strategies involved in fostering adoption. As these processes of implementation take place within an organizational context, it is likely that the processes will be influenced by the prevailing human and physical conditions. Thus, it seems appropriate that the organizational setting and the processes are dealt with together.

The nature of CCTV as an aid in teacher education is expressed as the first ten variables. Numbers 1-6 correspond with the concepts which Rogers and Shoemaker, (1971), advocate, as a result of their review of the literature. These concepts are the relative advantage, complexity, divisibility, compatibility, and communicability of the innovation. Variables 7, 8, 9, are drawn up with the consideration that the staff members persisted with their demands for provision of the equipment as covered in the history of this case study. Hence, it is probable that the use of CCTV has advantages which may be seen to outweigh the difficulties or problems involved. It may also have potentialities which motivate the staff to usage and encourage a willingness to make concerted efforts. This aspect of staff motivation and willingness are important factors seen to influence adoption (Hetzel and Barnard, 1973; Kirkpatrick, 1969; Giacquinta, 1973). Variable 9 tests the assumption of individual satisfaction and intrinsic reward associated with its usage. It has been suggested that resistance could arise when a new venture threatens an individual's well-being, e.g. his established role (Coffey, 1957) or status (Miles, 1964), thereby incurring a fear of losing some current satisfaction, such as power or dependency (Lippit et al, 1958). It may also involve some risk of a feeling of incompetence (Joyce, 1969), or personal, costs (Gorton, 1972). Variable 10 concerns the assumption that the nature of CCTV as an innovation did not generate these effects.

Variables 11-15 deal with the organizational setting and the process of implementation as the next focal area.

It is first concerned with factors that set the 'right' circumstances permitting adoption of CCTV.

Variables 11 and 12 refer to an organizational climate which is receptive and ready for the use of CCTV as a new venture in teacher education. It has been pointed out that teacher norms can act as a barrier to innovating. (Gorton, 1971). Thus, if the general staff wanted the equipment, with the administration and faculty attitudes in favour of it, then this may be seen

to constitute the norm conducive to change.   In addition,
the expression of desire or commitment on the part of
school personnel to making change, presupposes the
strategy emphasising commitment expressed by Giacquinta,
(1973).   This stategy maintains that the greater the
commitment or desire on the part of school personnel to
effect change, the greater the change that may be expected.
It is suggested that commitment of a group must be
achieved early in the process to sustain morale during
the process.   This is because innovating is seldom a
solo operation.   Variable 12 refers specifically to
the administration and faculty attitudes.   It is felt
that the administrator and his chief subordinates can
determine when and how fast change will take place in a
given organization.   (Eberle, 1969).   This may be
through the provision of conditions (e.g. finance, plant,
personnel) or programmes of training and re-training to
assist implementation of the innovation.   The availability
of the necessary resources for the innovation to take
place, and the feasibility of adequate physical accommo-
dation is covered by variables 13 and 14.

Suggestions have been made that the bureaucratic
structure of the educational establishment does not
usually include within its organization an explicit
system for generating, introducing and instituting change.
More often than not, its character creates resistance,
or problems of change.   (Abbot, 1965; Anderson, 1968;
Blau, 1956; Gorton, 1971; La Pierre, 1965; Owens, 1970;
Schoen, 1969.)   With reference to the case study, variable
15 states that the organizational structure did not give
rise to significant problems.   The term 'organizational'
is used to control for implications of negative views
towards change with which the word 'bureaucracy' seems
often to be associated.

This leads on to variable 16 with the proposal that
adequate communication between staff members facilitated
knowledge and discussion about the innovation and its
adoption.   This would imply effective communication
between staff members in both the vertical and horizontal

levels of the bureaucratic hierarchy. Development and
clarification of relevant ideas is thus made possible.
It also indicates the existence of morale among the staff,
which may well be a climate of general goodwill and
cooperation as covered by variable 17. Variable 18
assumes that the high morale is maintained by the tactics
used by the personnel concerned to get the innovation
implemented. This leads &. to the next few variables
which draw attention to strategies believed to facilitate
adoption.

Variables 19,20,21 express the strategy emphasising
knowledge and understanding. It maintains that organiza-
tional change in schools is a function of the extent to
which personnel gain awareness and understanding of the
innovation, (Giacquinta, 1973). It implies the
participation of subordinates with their superiors in
discussions and decision-making about the innovation and
the process of implementation. (Havelock, 1969; Maquire,
1970; Benne and Birnbaum, 1960; Dufay, 1966; Oliver,
1965; Trump, 1967). This may be in clarifying its
goals and objectives, in examining the strengths and
weaknesses of the proposed change. There may also be
feedback on the extent to which the innovation is
accomplishing its objective, with consideration of
whether there is a need for modifications, additional
orientation, resources or the like. According to
Giacquinta, (1973), the understanding which organizational
members have of the innovation, their ability to exhibit
the new attitudes, values and behaviour required, and
their willingness to make the necessary efforts are key
personal factors influencing change. Brickell, 1964;
Brim, 1968; Brim and Wheeler, 1960; discuss these
personal factors as being largely a consequence of the
training provided. Adequate training has been further
advocated to enable an individual to perform his new role
competently.

As distinct from rigid adherence to rules and
regulations in a bureaucracy, variable 22 considers the
aspect of flexibility in organizational arrangements.

This means that where necessary, consideration was given to modifying set aspects of the organization, e.g. in time-tabling.

The next variable points to an atmosphere of freedom seen by Jones (1969), to be a standard condition for change. It suggests that the staff members were free to use the equipment without compulsion or undue pressure. This aspect has been seen as a climate of autonomy, as Miles, (1964) puts it.

Variable 25 sums up the list, by suggesting that the innovation has adequately proceeded through the development and implementation phases. It is thus, presently, well-established as part of the system's programme.

These 25 variables formed the basis of questionnaire II. The subjects were asked to rate them according to the extent to which they perceived the relevance of each of the variables in relation to which CCTV in the College has been used by the staff as a whole. The instruction reminds them that the rating need not be on the basis of personal experience, as the questionnaire draws on their perception of the use of CCTV by the staff as a whole. The four response categories were used, as in Questionnaire I.

The two questionnaires were mailed to each of the 15 regular-users, 13 non-regular users and 15 non-users. The next chapter will analyse the responses obtained.

CHAPTER V

DATA ANALYSIS

Preamble

After a period of four weeks and a follow up in an attempt to have all the questionnaires handed in, the responses to questionnaire I and II were recorded in Tables II and III respectively.

To the extent that a case study within an organizational context is focussed there are some limitations in processing the data.

Firstly, the data obtainable is dependent on the responses to the two questionnaires from the defined sample of organizational members. It can be seen that 11 questionnaires were received from the regular users. 10 from the non-regular users, and 8 from the non-users. (This represents a 67% return on the 43 questionnaires which were sent out.) The very size of the numbers does not seem to warrant sophisticated statistical procedure.

In tests of significance such as Chi square, Mann-whitney U, or Kolmogorov-Smirnov, the numbers appear to be too small to permit statistical validity. To illustrate, there are two types of errors which may be made in arriving at a decision about the null hypothesis (Ho.) The first, the Type I error, is to reject Ho. when in fact it is true. The second, the Type II error, is to accept Ho. when in fact it is false. To reduce the possibility of both types of errors, then, the size of the sample needs to be increased. This is probable in further research, involving bigger organizations and larger sample numbers.

However, for this study, statistical procedures which are relatively simple and straightforward fulfil the aims pursued.

TABLE II

THE RESPONSES TO EACH PROBLEM LISTED IN QUESTIONNAIRE I

Sample No.		Problem Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	a	c	c	c	c	d	c	c	d	d	c	c	c	c	d	b	•
2	a	c	b	c	c	c	c	c	c	c	d	b	c	d	c	•	•
3	b	b	c	d	c	b	c	b	c	d	c	c	d	d	d	d	•
4	b	b	d	c	c	c	b	c	a	d	d	c	d	d	d	d	a → *1
5	c	c	b	c	c	c	b	c	d	d	c	a	d	c	d	b	•
6	b	c	a	b	c	c	a	a	c	b	c	b	b	d	•	b	b → *2
7																	
8																	
9	c	c	c	c	c	c	a	b	a	c	c	c	b	c	d	a	•
10	b	c	c	d	d	b	c	b	c	b	c	c	d	b	c	•	
11	b	a	d	c	b	b	c	b	c	c	b	d	c	c	d	•	
12	a	b	d	d	d	d	c	d	b	b	c	c	d	d	d	d	c → *3
13																	
14	b	b	c	d	c	c	d	b	c	b	b	c	d	c	b	c	•
15																	
16	b	b	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
17	d	d	c	c	c	c	c	c	d	d	b	d	c	d	d	d	•
18	a	b	c	c	c	c	a	c	d	c	b	c	c	•	b	b	•
19																	
20	c	d	c	d	d	d	c	c	d	d	d	c	c	d	d	c	•
21	d	d	c	c	d	d	b	d	c	d	c	d	d	d	d	c	•
22	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	•
23	d	d	d	d	d	b	d	d	d	d	d	b	d	d	d	d	x → *4
24																	
25	a	d	b	d	d	c	a	d	b	d	c	c	d	d	d	c	•
26	c	c	a	a	c	b	d	d	d	d	a	d	d	c	d	d	•
27	c	c	b	a	a	a	a	a	c	a	b	a	c	c	•	b	•
28																	
29																	
30	d	c	b	c	c	a	b	d	b	c	b	c	b	•	•	d	•
31																	
32																	
33	c	c	c	c	c	c	a	c	c	c	c	c	c	c	c	c	a → *5
34	b	a	•	a	a	a	•	•	b	b	b	•	•	•	a	•	•
35																	
36																	
37	c	b	d	d	d	d	a	d	d	d	d	d	d	d	d	d	•
38																	
39																	
40	a	a	c	b	b	b	b	d	b	a	a	c	c	d	d	d	•
41	d	d	d	d	d	d	d	d	d	d	b	d	d	d	d	d	•
42	a	a	d	d	d	d	a	d	d	a	d	d	d	d	d	d	•
43	a	a	d	d	d	c	c	c	c	a	c	c	c	c	b	c	•

REGULAR USERS (rows 1–15)
NON-REGULAR USERS (rows 16–29)
NON-USERS (rows 30–43)

Key: Rating Scale

a = Great Deal
b = Much
c = Not Very Much
d = None

*1 = lack of good supply of videotapes
*2 = difficulty in connection with drama
    activities - having to move props
*3 = lack of experience with equipment
*4 = advanced planning needed
*5 = unsuitability for external use in
    field situation

TABLE III — THE RESPONSES TO EACH OF THE 25 VARIABLES LISTED IN QUESTIONNAIRE II

Group	Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
REGULAR USERS	1	a	b	c	c	b	b	b	b	a	d	b	b	c	c	c	b	a	b	c	c	b	a	a	b	b
	2	a	a	a	b	a	a	a	a	a	c	a	a	b	c	-	c	b	b	c	b	b	b	a	-	b
	3	a	a	b	a	b	a	b	a	a	c	b	b	b	b	d	a	a	a	b	c	b	b	b	b	b
	4	a	b	b	b	c	b	b	a	a	d	c	b	b	b	b	c	b	c	d	d	c	d	c	c	b
	5	b	a	b	b	b	a	a	b	b	c	b	a	c	c	-	c	b	c	c	c	c	b	c	a	-
	6	a	a	c	a	b	b	b	b	b	c	c	c	c	c	c	c	c	b	c	d	d	c	c	a	b
	7																									
	8																									
	9	c	c	b	b	c	b	c	c	a	a	c	a	c	c	b	c	c	c	c	c	c	b	a	c	c
	10	a	a	a	b	a	b	a	a	a	a	a	a	b	b	c	c	a	b	c	b	a	b	a	c	a
	11	a	a	a	a	a	a	b	b	b	b	b	a	b	c	-	b	b	b	c	b	a	a	a	-	b
	12	a	b	d	d	d	c	b	a	b	d	d	a	b	b	a	b	a	c	b	a	a	a	a	b	b
	13																									
	14	a	a	a	a	b	a	a	b	b	c	b	b	b	c	b	c	a	b	c	c	b	b	a	b	b
	15																									
NON-REGULAR USERS	16	b	b	b	b	b	b	b	b	b	c	c	a	a	c	b	b	b	b	c	c	a	c	b	c	c
	17	b	a	c	c	c	b	b	b	c	d	c	b	a	c	c	b	a	b	d	b	a	b	a	b	b
	18	a	a	a	-	a	b	a	a	b	-	a	a	b	a	-	a	a	b	a	a	a	b	a	-	a
	19																									
	20	a	b	b	b	a	a	a	a	a	d	c	b	b	c	c	b	a	b	d	c	b	d	a	c	b
	21	a	b	d	d	b	a	b	b	a	d	a	a	b	a	d	a	a	a	b	b	a	a	a	a	a
	22	b	a	b	b	a	a	a	a	b	d	a	b	b	b	b	a	a	a	b	a	a	b	a	b	a
	23	b	b	c	b	b	d	d	c	c	d	c	a	b	a	a	a	a	b	b	a	b	a	b	a	a
	24																									
	25	b	b	c	b	c	d	a	b	c	d	a	c	a	d	c	d	c	c	d	d	d	d	b	c	c
	26	c	b	c	b	c	b	b	b	b	d	c	b	c	c	b	c	b	b	b	c	b	c	a	b	b
	27	b	b	b	a	a	b	b	b	b	-	a	a	a	b	c	c	a	a	b	b	a	b	b	a	c
	28																									
NON-USERS	29																									
	30	a	a	b	c	b	c	b	c	b	c	b	b	d	b	c	b	a	b	c	b	b	b	a	c	b
	31																									
	32																									
	33	b	a	b	d	a	b	b	c	b	b	b	b	d	b	b	b	b	b	c	b	b	●	-	-	-
	34	-	b	-	-	b	-	b	b	b	-	a	b	b	c	-	-	b	-	c	c	b	-	b	-	b
	35																									
	36																									
	37	b	b	c	c	b	c	b	b	b	b	c	b	c	b	c	b	c	c	c	c	c	b	b	c	b
	38																									
	39																									
	40	a	b	d	a	a	-	b	a	b	-	c	a	c	c	-	a	a	a	b	a	a	b	a	-	b
	41	b	d	c	b	b	b	b	c	b	d	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	42	a	a	b	b	b	b	b	b	b	d	b	b	b	b	b	b	b	b	c	b	b	b	b	c	b
	43	b	b	b	b	b	b	b	b	b	b	b	a	b	b	a	b	b	b	b	b	b	c	a	a	b

Key : Rating Scale. a = Great Deal   b = Much   c = Not Very Much   d = None   - = No Response

Procedure

The data obtained from questionnaire I will be dealt
with first.   Following this, will be an analysis of the
data from questionnaire II.

Questionnaire I

This questionnaire first sought to find out the
extent to which the problems listed have been experienced
by the personnel concerned.   In order to do this,
Table IV notes the raw scores on each response and the no
response category.   The total scores on each response
category by the whole sample is shown.   This is further
presented as percentages of all the responses obtained from
the questionnaire.

To find out the rank order of severity of the list
of problems, the mean and standard deviation of each problem
for the total sample and each of the three groups were
computed.   This was done by allowing a value of 4 scores
to the Great Deal response, 3 to Much, 2 to Not Very Much,
1 to None, and 0 to the No response category.   Thus, from
the raw scores in Tables III, and applying these values
accordingly to the responses shown, the mean and standard
deviation of each problem was obtained as presented in
Table V.   Problem 7 (portability of the equipment) with the
highest mean severity value occupies rank I in Table V, with
the other problems following in their rank order of severity.
Problem 14 (experiences with a televised situation) with
the lowest mean value, occupies rank 16.

The next step involved finding the average of all
the mean values for the total sample and that of the
regular, non-regular and non-users.   As the mean of any
set of numbers is the sum of the elements divided by the
total number of elements in the set, and the means are
numbers, like any numbers, it follows that computation
of the mean of the means is valid.

TABLE IV   THE RAW SCORES ON EACH RESPONSE CATEGORY FOR EACH PROBLEM BY THE TOTAL SAMPLE, REGULAR USERS, NON-REGULAR USERS, AND NON-USERS

Prob. No.	TOTAL SAMPLE					REGULAR USERS					NON-REGULAR USERS					NON-USERS				
	GD	M	NVM	N	NR	GD	M	NVM	N	NR	GD	M	NVM	N	NR	GD	M	NVM	N	NR
1	8	8	7	6	-	3	6	2	-	-	2	1	3	4	-	3	1	2	2	-
2	5	7	10	7	-	1	4	6	-	-	-	2	2	6	-	4	1	2	1	-
3	2	5	10	11	1	1	2	5	3	-	1	2	3	4	-	-	1	2	4	1
4	3	3	10	13	-	-	2	5	4	-	2	-	3	5	-	1	1	2	4	-
5	2	2	13	12	-	-	1	8	2	-	1	-	3	6	-	1	1	2	4	-
6	3	4	11	11	-	-	1	7	3	-	1	2	2	5	-	2	1	2	3	1
7	9	7	5	7	1	2	4	3	2	-	3	1	1	5	-	4	2	1	-	1
8	2	3	11	12	1	1	3	6	1	-	1	-	3	6	-	-	-	2	5	1
9	2	6	9	12	-	2	2	5	2	-	-	1	2	7	-	-	3	2	3	-
10	4	6	5	14	-	-	5	2	4	-	1	-	1	8	-	3	1	2	2	-
11	2	7	12	8	-	-	1	8	2	-	1	3	2	4	-	1	3	2	2	-
12	2	4	14	8	1	1	3	7	-	-	1	1	3	5	-	-	-	4	3	1
13	0	3	9	16	1	-	2	3	6	-	-	-	3	7	-	-	1	3	3	1
14	0	0	10	16	3	-	-	5	6	-	-	-	3	6	1	-	-	2	4	2
15	1	4	2	19	3	-	2	1	7	1	-	1	-	8	1	1	1	1	4	1
16	1	5	7	14	2	1	3	2	4	1	-	2	3	5	-	-	-	2	5	1
TOTAL:	46	74	145	186	13															
%	9.9%	15.9%	31.3%	40.1%	2.8%															

TABLE V

EACH PROBLEM ARRANGED IN RANK ORDER OF THE MEAN SCORES OF THE TOTAL
SAMPLE, REGULAR USERS, NON-REGULAR USERS, AND NON-USERS

Rank Order	TOTAL SAMPLE			REGULAR USERS			NON-REGULAR USERS			NON-USERS		
	Prob. No.	Mean	S.D.	Prob. No.	Mean	S.D.	Prob. No.	Mean	S.D.	Prob. No.	Mean	S.D.
1	7	2.6428	7.769	1	3.0909	6.396	7	2.2000	3.655	7	3.4286	5.526
2	1	2.6206	7.503	2	2.5455	5.009	1	2.1000	2.844	2	3.0000	5.679
3	2	2.3448	6.263	7	2.5455	4.009	11	2.1000	2.914	1	2.6250	3.838
4	11	2.1034	5.986	12	2.4545	4.540	3	2.0000	2.530	10	2.6250	3.838
5	10	2.0000	5.311	8	2.3636	4.051	4	1.9000	2.982	11	2.3750	4.414
6	12	2.0000	5.806	9	2.3636	3.600	6	1.8000	2.385	6	2.2500	2.681
7	9	1.9310	5.253	16	2.1000	2.914	12	1.7000	2.315	9	2.0000	3.041
8	3	1.9285	5.021	3	2.0909	3.203	16	1.6000	2.610	4	1.8750	1.906
9	5	1.8965	5.485	10	2.0909	4.357	2	1.6000	2.498	5	1.8750	1.906
10	6	1.8965	5.485	5	1.9091	4.562	5	1.6000	2.154	15	1.8570	1.726
11	4	1.8620	4.890	11	1.9091	4.562	8	1.6000	2.498	13	1.7143	2.185
12	8	1.8214	4.928	4	1.8182	3.242	9	1.4000	2.332	12	1.3750	2.690
13	16	1.7407	5.911	6	1.8182	3.242	10	1.4000	2.538	14	1.3333	1.886
14	13	1.5357	4.609	13	1.6364	2.672	14	1.3333	2.494	16	1.2857	2.050
15	15	1.5000	4.290	15	1.5000	2.579	13	1.3000	2.610	8	1.2857	2.050
16	14	1.3846	4.828	14	1.4545	3.202	15	1.2222	2.572	3	1.1429	1.552
TOTAL	$\overline{X}$	1.9505			2.1057			1.6972			2.0030	

This would enable the problems which are above the total mean values of severity to be identified. Following this, Table VI notes the problems which are above the total mean of the whole sample and of any or all of the three groups of regular, non-regular and non-users respectively. This would determine the particular problems which require prior concern with reference to regular, non-regular and non-usage.

Questionnaire II

The aim of this questionnaire was to find out the extent to which the regular, non-regular and non-users perceive a suggested list of variables believed to have influence on adoption, as relevant to usage of CCTV at the general organizational level.

From the responses indicated in Table I, the procedure which follows to analyse the data is similar to that for questionnaire I. Firstly, the raw scores on each response and the No response category for the 25 variables are recorded in Table VII. It also shows the total scores of each of the categories by the whole sample and these as percentages of all the responses obtained from the questionnaires. Applying the values of 4 scores to the GD, 3 to M, 2 to NVM, 1 to N, and 0 to the NR category, the mean and S.D. for each variable by the total sample and the three groups was calculated. This is presented in Table VIII. It shows each variable in its rank order of relevance as determined by the mean scores obtained. This Table further presents the total mean score of relevance for all the variables. It thus became feasible to present the variables which were above the total mean scores of relevance by the total sample, as well as of all or any of the other three groups. (Table IX).

TABLE VI

THE PROBLEMS WHICH ARE INCLUDED AS ABOVE THE TOTAL MEAN SCORES OF
SEVERITY RATED BY THE TOTAL SAMPLE AND THAT OF EITHER OR ALL OF
THE REGULAR, NON-REGULAR AND NON-USERS

Problem Experienced	Total Sample (Z) x : 1.1505	Included as above groups:-	Reg.Users (A) x:2.1059	Comparison with (Z)	Non-Reg. Users (B) x:1.6972	Comparison with (Z)	Non-Users (C) x:2.0030	Comparison with (Z)
No.7 Portability of equipment	2.6428	ABC	2.5455	<.0973	2.2000	<.4428	3.4286	>.7858
No.1 Time Involvement	2.6206	ABC	3.0909	>.4703	2.1000	<.5206	2.6250	>.0044
No.2 Organizing work demands	2.3448	AC	2.5455	>.2007	*	<.7448	3.0000	>.6552
No.11 Overcoming initial inertia	2.1034	BC	*	*	2.1000	<.0034	2.3750	>.2716
No.10 Departmental staffing	2.0000	C	*	*	*	*	2.6250	>.6250
No.12 Availability of unit	2.0000	AB	2.4545	>.4545	1.8000	<.2000	*	*

* Problem is not included as above the x̄ of the group

TABLE VII

THE RAW SCORES ON EACH RESPONSE CATEGORY FOR EACH VARIABLE BY THE TOTAL SAMPLE, REGULAR USERS, NON-REGULAR USERS, AND NON-USERS

Prob. No.	TOTAL SAMPLE					REGULAR USERS					NON-REGULAR USERS					NON-USERS				
	GD	M	NVM	N	NR	GD	M	NVM	N	NR	GD	M	NVM	N	NR	GD	M	NVM	N	NR
1	15	11	2	-	1	9	1	1	-	-	3	6	1	-	-	3	4	-	-	1
2	12	14	2	1	-	7	3	1	-	-	3	7	-	-	-	2	4	1	1	1
3	5	12	8	3	1	4	4	2	1	-	1	4	4	1	-	-	4	2	1	1
4	6	14	4	3	2	4	5	1	1	-	1	6	1	1	1	1	3	2	1	1
5	9	14	5	1	-	3	5	2	1	-	4	3	3	-	-	2	6	-	-	-
6	8	14	3	2	2	5	5	1	-	-	3	5	-	2	-	-	4	2	-	2
7	8	19	1	1	-	4	6	1	-	-	4	5	-	1	-	-	8	-	-	-
8	9	16	4	-	-	5	5	1	-	-	3	6	1	-	-	1	5	2	1	-
9	8	17	4	-	-	6	5	-	-	-	2	5	3	-	-	-	7	1	-	-
10	2	4	7	12	4	2	1	5	3	-	-	-	1	7	3	-	3	1	2	2
11	8	10	10	1	-	2	5	3	1	-	5	-	5	-	-	1	5	2	-	-
12	12	15	2	-	-	6	4	1	-	-	5	4	1	-	-	1	7	-	-	-
13	5	16	7	1	-	-	7	4	-	-	4	5	1	-	-	1	4	2	1	-
14	3	11	13	2	-	-	4	7	-	-	3	2	4	1	-	-	5	2	1	-
15	3	9	9	2	6	1	3	3	1	3	1	3	4	1	1	1	3	2	-	2
16	6	11	10	1	1	1	3	7	-	-	4	3	2	1	-	1	5	1	-	1
17	14	12	3	-	-	5	5	1	-	-	7	2	1	-	-	2	5	1	-	-
18	6	16	6	-	1	2	5	4	-	-	3	6	1	-	-	1	5	1	-	1
19	1	10	13	5	-	-	1	8	2	-	1	5	1	3	-	-	4	4	-	-
20	4	12	10	3	-	-	4	5	2	-	3	3	3	1	-	1	5	2	-	-
21	10	15	3	1	-	3	5	3	-	-	6	3	-	1	-	1	7	-	-	-
22	5	14	6	3	1	3	5	2	-	-	2	4	2	2	-	-	5	2	-	1
23	19	9	1	-	-	9	1	1	-	-	6	4	-	-	-	4	4	-	-	-
24	4	8	9	2	6	-	4	4	-	3	3	3	3	-	1	-	1	2	2	2
25	5	19	4	-	1	1	8	1	-	1	4	3	3	-	-	-	8	-	-	-
Total:	187	322	146	44	26															
%	25.793	44.411	20.137	6.069	3.586															

TABLE VIII   EACH VARIABLE IN RANK ORDER OF RELEVANCE, DETERMINED BY THE MEAN SCORES OF
THE TOTAL SAMPLE, REGULAR USERS, NON-REGULAR USERS AND NON-USERS

Rank Order	TOTAL SAMPLE			REGULAR USERS			NON-REGULAR USERS			NON-USERS		
	V. No.	Mean	S.D.	V. No.	Mean	S.D.	V. No.	Mean	S.D.	V. No.	Mean	S.D.
1	23	3.6206	14.540	1	3.7272	10.250	17	3.6000	8.333	23	3.5000	6.144
2	1	3.4642	6.350	23	3.7272	10.250	23	3.6000	7.684	1	3.4285	5.421
3	17	3.3793	11.940	2	3.5454	8.151	21	3.5000	7.338	12	3.1250	6.881
4	12	3.3448	11.780	9	3.5454	7.762	12	3.4000	6.576	17	3.1250	5.183
5	2	3.2068	10.890	12	3.4545	7.340	2	3.3000	6.900	21	3.1250	6.881
6	21	3.1724	10.780	6	3.3636	6.773	13	3.3000	6.133	7	3.0000	7.937
7	7	3.1724	11.720	8	3.3636	6.772	8	3.2000	6.063	16	3.0000	5.099
8	8	3.1724	10.780	16	3.3636	3.916	1	3.2000	6.063	18	3.0000	5.099
9	9	3.1379	10.840	17	3.3636	6.773	18	3.2000	6.080	25	3.0000	7.937
10	5	3.0689	9.979	3	3.0000	2.374	7	3.2000	6.161	2	2.8750	4.285
11	6	3.0370	9.773	21	3.0000	5.275	25	3.1000	5.263	8	2.8750	4.885
12	25	3.0357	11.110	7	3.2727	6.510	5	3.1000	5.263	9	2.8750	6.881
13	18	3.0000	9.950	4	3.0909	5.885	6	3.1000	5.376	11	2.8750	4.885
14	4	2.8888	9.469	25	3.0000	7.113	11	3.0000	6.403	20	2.8750	4.885
15	11	2.8620	8.484	22	2.9090	5.161	24	3.0000	4.472	15	2.8333	3.288
16	13	2.8620	9.583	5	2.9090	5.162	16	3.0000	5.138	22	2.7142	5.202
17	16	2.7857	8.126	18	2.8181	4.914	9	2.9000	4.908	6	2.6666	4.423
18	22	2.7500	8.671	11	2.7272	4.712	20	2.8000	4.285	13	2.6250	3.904
19	3	2.6785	7.929	13	2.6363	6.242	4	2.7777	5.534	4	2.5714	3.111
20	24	2.6086	6.605	15	2.5000	3.240	14	2.7000	4.148	5	2.5000	4.444
21	20	2.5862	7.806	24	2.5000	3.815	22	2.6000	4.005	14	2.5000	4.899
22	15	2.5652	6.756	14	2.3636	5.032	19	2.6000	1.020	19	2.5000	4.444
23	14	2.5172	7.722	20	2.1818	4.218	3	2.5000	4.031	3	2.4285	4.135
24	19	2.2413	7.123	10	2.1818	3.434	15	2.4444	3.468	10	2.1666	3.560
25	10	1.8400	4.304	19	1.9090	4.562	10	1.1250	3.909	24	2.1666	1.675

TOTAL MEAN SCORE OF TOTAL SAMPLE :   2.9199,   NON-REGULAR USERS :   2.9698
                        REGULAR USERS :   2.9781,   NON-USERS :   2.8140

TABLE IX

THE VARIABLES WHICH ARE ABOVE THE TOTAL MEAN SCORES OF RELEVANCE OF THE TOTAL SAMPLE, AND THAT OF EITHER OR ALL OF THE REGULAR USERS, NON-REGULAR USERS, AND NON-USERS

VARIABLES	TOTAL SAMPLE MEAN (X)	ABOVE MEAN OF	REG. USERS MEAN. 2.9781 (A)	DIFFERENCE WITH (X)	NON-REG. USERS MEAN.2.9698 (B)	DIFFERENCE WITH (X)	NON-USERS MEAN: 2.8140 (C)	DIFFERENCE WITH (X)
23 Indiv. freedom	3.6206	ABC	3.7272	>.1066	3.6000	<.0206	3.5000	<.1206
1 Relative advantages	3.4642	ABC	3.7272	>.2630	3.2000	<.2692	3.4285	<.0357
17 Goodwill & cooperation	3.3793	ABC	3.3636	<.0157	3.6000	>.2207	3.1250	<.2543
12 Admin.& faculty attitudes	3.3448	ABC	3.4545	>.1097	3.4000	>.0552	3.1250	<.2198
2 Helps teaching area	3.2068	ABC	3.5454	>.3386	3.3000	>.0932	2.8750	<.3318
21 Adequate training	3.1724	ABC	3.0000	<.1724	3.5000	>.3276	3.1250	<.0474
7 Advantages outweigh problem	3.1724	ABC	3.2727	>.1003	3.2000	>.0276	3.0000	<.1724

TABLE IX (continued)

VARIABLES	TOTAL SAMPLE MEAN (X)	ABOVE MEAN OF	REG.USERS MEAN. 2.9781 (A)	DIFFERENCE WITH (X)	NON-REG. USERS MEAN.2.9698 (B)	DIFFERENCE WITH (x)	NON-USERS MEAN: 2.8140 (C)	DIFFERENCE WITH (X)
8 Potentialities & motivation	3.1724	ABC	3.3636	>.1912	3.2000	>.0276	2.8750	<.1974
9 Satisfying & rewarding	3.1379	AC	3.5454	>.4075	-	-	2.8750	<.2629
5 Compatibility	3.0689	B	-	-	3.1000	>.0311	-	-
6 Communicability	3.0370	AB	3.0370	equal with (X) score	3.1000	>.0630	-	-
25 Stages	3.0367	BC	-	-	3.1000	>.0643	3.000	<.0357
18 Tactics used & high morale	3.0000	BC	-	-	3.2000	>.2000	3.000	equal with (x) score

CHAPTER VI

Findings and Discussion

Table IV suggests that the identified problems
were, on the whole, not severe.   This may be inferred
from the 40.1% response of None, 31.3% of Not Very
Much, 15.9% of Much and 9.9% of Great Deal.   With
2.87% in the No Response category it is apparent that
71.4% of the responses obtained were on problems rated
as NVM and N, with 25.8% on GD and M.

From Table V, it appears that the problems were relatively
more severe for the regular and non-users.   Their means
are .1552 and .0525 scores above the total sample mean
of 1.9505.   It is interesting to note that the mean of
the non-users is .0027 below that of regular users, a
difference which is almost negligible.   For the non-
regular users, the mean score is .2533 below that of the
total sample, which shows that they relatively have
experienced the problems to a lesser extent.   All this
suggests a need for concern that in dealing with problems
of innovation reference be made to regular, non-regular
and non-regular and non-usage.

Six problems are noted to be above the mean severity
score of 1.9505 by the total sample.   These are problems,
7 (portability of the equipment,) 1 (time involvement),
2 (organizing work demands), 11 (overcoming initial
inertia), 10 (departmental staffing), and 12 (availability
of the unit).

From Table VI problems 7 and 1 are noted as above
the average severity scores of the total sample as well
as that of the regular, non-regular and non-users. This
clearly suggests that these two problems need prior
attention.   Firstly, CCTV would seem to be more applicable
in teacher education with the provision of portable
equipment.   That the non-users and non-regular users have
placed this problem in rank 1 of severity adds further to

this recommendation.

Portable video tape equipment such as the back pack seems particularly suited where the subject teaching area involves external field situations and follow up studies. While use of the mobile unit involves siting the van (with its video tape recorder, two camera system and editing facilities) and a specialist technician, the back pack would seem to be more convenient for frequent use. This would seem to be more so, in cases where frequent follow-up studies are needed, and where availability of the unit (which is shared by the two divisions of the College) can become a pressing problem.

The next most severe problem of time involvement could be said to be as severe as that concerning the portability of the equipment. It is 0.0222 of a score less than the latter in its mean value and above the average seventy scores of the three groups respectively. Tables V and VI show that the regular users rate this problem to be outstanding in their experiences, i.e. occupying rank I and having the highest severity scores as compared with the other two groups. Thus, attention to this problem with particular reference to the regular users is needed. It seems probable that concern with this problem would help to alleviate the next which is that of organizing work demands.

To illustrate a typical example of the amount of time and work demands involved is as follows -
To produce 15 minutes of finished tape - 2 x 2 hours is needed for planning, 1 x 2 hours for school briefing, 4 x 2 hours for videotaping, 2 x 6 hours for editing, all of which takes a total of 26 hours of staff time, over and above that of normal responsibilities. In addition, more hours of work would be needed for captions, or commentary for the tape. Use of the static unit also involves additional time and work. In a micro-teaching situation for example, small groups are required. Thus a lecturer who has worked with groups of forty, quadruples his load when he uses groups of ten for feedback type activities.

A suggestion which may help to relieve their work
demands and time involvement is the need for specialist
staff. A professional educator, for example, could
direct the unit and generally provide the educational
input to television production. A specialist producer
could take charge of organizing the production in
studio or classroom in order to meet the educational
specifications. A technician and a handyman could be
employed for functions such as maintenance and conveyance.
The technician for example, would service the television
and audio-visual equipment, set up and assist with
direction of the film. The handyman would see to
minor routine maintenance, storage, delivery, setting
up lighting-static units, projectors or the like. A
signwriter could attend to graphics such as lettering,
drawing, diagrams or photographs.

To enable more effective use of CCTV these consider-
ations of additional staff and diversifying duties, would
seem to warrant further concern.

The next problem of overcoming initial inertia is
noted as being experienced predominantly by the non-users.
Their severity score is .2716 above that of the total
sample, while that of the non-users is .0034.   The
regular users have not rated this problem to be above
the total mean.   It appears then, that concern with
this problem should be focussed firstly with reference
to the non-users and then the non-regular users.   This
problem may be seen to have some relation to that of
time involvement and organizing work demands.   Thus
unless one is enthusiastic to the extent of being
prepared to put other duties aside, the effort of
learning how to use the equipment, trying it out and
seeing its possibilities can be hindering to its usage.
It is likely that this inertia would decrease as additional
specialist and paraprofessional staff becomes available.

While supplementary staff can be seen to contribute
towards more effective usage, the issue of adequate

staffing is an important one. Table VI shows that departmental staffing is a problem experienced relatively most severely by the non-users. Their response is .6250 scores above the mean of the total sample. The regular and non-regular users have not experienced this problem as being above their average severity rating. Under conditions whereby the department is understaffed, or its size is small, it is reasonable to assume that normal duties would be a full load. Thus willingness to be involved with further commitments may be minimal until adequate staffing is available.

Last, but not least, with the same severity scores as the previous problem, availability of the unit is a problem shared by the regular and non-regular users. This is more so with the regular users as indicated by their mean ratings of .4545 above that of the sample. The non-regular users have this problem recorded as above their mean severity rating, but it is below the total sample mean rating by .2000. This problem seems to have roots in the fact that the mobile unit and the technician are shared between the two divisions of the College. Besides which, when the equipment and staff are under the control of a third institution (Education Department), it becomes difficult to have the equipment and service as and when required. The static unit, at times when the technician is away, becomes inoperable. It has been pointed out (Interim Report, p.6) that the extreme goodwill and tolerance of the many groups involved and especially that of the technician have made a co-ordinated effort feasible. It would seem probable that the provision of additional specialist staff would relieve the dependence on the present one and only technician to help alleviate the problem.

In the interest of research priorities, it appears that these six problems, which were relatively more severe than the others identified, need prior attention. This would enable the problems to be dealt with appropriately before they become potent enough to hinder change. Efforts

could then be directed towards overcoming them, with
reference to how severely they have been experienced by
the regular, non-regular and non-users. Subsequently
those remaining problems, following in their order of
severity, could be dealt with. It would seem that
consistent evaluation of the innovation and its related
difficulties would lead to an awareness of the matters
that need greatest attention.

While problems have been noted, as accompanying
change, it need not be assumed that this is an unhealthy
sign. When 'old' problems have been settled, it becomes
likely that new ones could arise. The existence of
problems, then, demands attention in order to attain a
further level of competence with an innovation, or what
was once an innovation.

From the survey of the severity of the problems
experienced in this case study, it could be seen that
they were of a relatively minor nature. An implication
is for follow-up studies to seek some understanding for
this.

As an initial follow-up, the second questionnaire
sought to investigate the relevance of a list of twenty-
five variables. From Table VII it appears that they
were to a good extent relevant to the case study.

On all the responses obtained, 25.793% were GD,
44.411 were M, 20.139% were NVM, 6.069% were M and 3.588%
were in the NR category. This gives a majority of 70.204%
on responses of GD and M.

It can be seen, too, that perception of the variables
were on the whole not very different between the three
groups. While the total mean scores of the whole sample
was 2.9199, that of the regular users was 2.9781, non-users
was 2.8140. This shows that with .0582 scores greater
than that of the total sample, the regular users see the
variables to be most relevant comparatively. However,
the difference between the scores of the regular and
non-regular users is .0083, which seems almost negligible.
The non-users have perceived the variables to be less

relevant comparatively, but with .1558 and .1059 scores below that of the non-regular users and the total sample, the difference does not appear great.

As shown in Table IX, 13 variables are above the mean of 2.9199 of the total sample. Of these 8 are included as above the total group means of the regular, non-regular and non-users. This suggests their relevance as relatively outstanding over the remaining variables.

These, in their rank order, deal with the following:-

Variable 23, suggesting individual freedom to use the equipment;

" 1, on increasing the effectiveness of existing practices;

" 17, on the general goodwill and co-operation among the staff;

" 12, on a favourable disposition of the administration and faculty towards the innovation;

" 2, on adequate training;

" 7, on advantages outweighing the difficulties or problems involved;

" 8, on being motivated by the potentialities of using CCTV.

The other five variables are above the mean of either one or two of the three groups respectively. These are variables 9, 5, 6, 25, and 18.

Variable 9 suggests that CCTV was found to be satisfactory and rewarding to the individual user. The regular users have outstandingly perceived this to be so, with .4075 scores greater than that of the total sample. This variable stands above the total mean of the non-users but is .2629 below that of the total sample. It is also below the group mean of the non-regular users.

The next variable suggests compatibility with the values and needs of the College as a whole. It is interesting to note that of the three groups it is only the non-regular users that perceive this as above their own group mean, plus that of the total sample by .0311. The variable is below the group mean of the regular and non-users.

Variable 6 covers the aspect of communicability of the innovation, i.e. it is relatively easy to demonstrate and evaluate its uses and let other people know about these. The total mean score of the non-regular users is .0630 above the total sample mean. That of the regular users is equal with the total mean score. For the non-users, it is below their mean.

That CCTV has adequately proceeded through the stages of the developmental and implementation phases to be now well-established as part of the College programme constitutes variable 25. It is below the group mean of the regular users but above that of the non-regular and non-users. For the non-regular users, the scores are greater than that of the total sample by .0643. For the non-users, it is below the total score by .0357.

The last of the variables above the total sample mean is variable 18. It suggests the general concept that the tactics used by the personnel concerned to get the innovation implemented, maintained high morale among the staff and an atmosphere conducive to the change. It stands below the mean of the regular users. For non-regular users, the mean scores are greater than that of the total sample by .1. For the non-users, the mean scores are equal to the total sample mean.

Of these 13 variables covered, it can be seen that 3 are on aspects relating to the organizational setting. There are variables 23 (on a climate of experimental freedom); 17 (on the general goodwill and cooperation of the staff) and 12 (favourable administration and faculty attitudes) occupying rank 1, 3 and 4 in the order of perceived relevance. Seven of the variables are on attributes of the innovation, in rank 2, 5, 7, 8, 9, 10 and 11 respectively. These are variables

1, 2, 7, 8, 9 (covering aspects relating to the relative advantage of using CCTV); 5 (on compatability) and 6 (on communicability of the innovation.)

That these variables are above the mean score of relevance by the total sample further supports their significance in influencing change and adoption. As they were generally seen to be relevant to the case study, it seems likely that they may have aided implementation. Consequently the problems experienced appear to be of a relatively minor nature.

To the extent that these findings are within the context of a particular case study, it is of course possible that this same innovation may have different effects in other systems. This qualification is made with the recognition that as two organizations or adopting systems would be identical in their nature, composition or structure. Thus, while reference to these findings would seem to provide worthwhile information for similar systems intending to incorporate CCTV as part of their educational programmes, the generalizability of a case study clearly has limitations.

CHAPTER VII

Conclusions -

In the ultimate interest of facilitating the
implementation of educational innovation, this study may
have some contributions to make. For example, the
problems to which attention could be given are identified
and their nature exposed. This may assist early concern
for their alleviation before they become potent. In
particular, reference to the severity of the problems to
the regular, non-regular and non-users could enable the
problems to be dealt with appropriately.

An understanding of the problems of time involvement,
organizing work demands, overcoming initial inertia,
departmental staffing, and the availability of the units
has an implication. It seems likely that until there is
adequate departmental staffing, as well as additional
specialist and para-professional staff to meet the demands
of the innovation, the problems will persist. Accordingly,
attention is drawn to this point.

For similar systems intending to incorporate CCTV as
part of their teacher education programmes, this study has
some implications. For example, the attributes of CCTV
merit consideration in regard to its usage. These include
its observed potential in motivating users. In addition,
its advantages have been seen to outweigh any difficulties
or problems in its usage. A recommendation which may make
CCTV more applicable in teacher education is to allow for
the provision of portable video-tape equipment.

A factor of importance is an organizational setting
which is conducive for the innovation. This is expressed
as an atmosphere of freedom to use the equipment, goodwill
and cooperation by the organizational members and a favour-
able disposition by the administration and the faculty
towards usage of the innovation. Third are appropriate
strategies to enable the innovation to become established
as part of the systems programme. This includes adequate
training so that a staff member would be able to operate

the equipment and perform his new role competently.
Further, are the tactics used by the relevant personnel
concerned, to maintain high morale among the staff and
an atmosphere congenial to change. As the variables
covering these aspects are general in nature, it seems
that further studies are needed to gain a deeper under-
standing of just what each constitutes. To illustrate,
variable 21 suggests the provision of adequate training.
However, to find out what this consists of (for example,
the actual strategies employed to provide this training)
implies further research.

It may be suggested that the procedures used in
this study are ones that change agents, administrators
or whatever personnel concerned with change and adoption;
may find useful as one aspect of evaluation. They are
relatively informal, based on wide literature sources and
do go some way towards identifying difficulties and
facilitating factors.

As it is not possible to produce blueprints for
bringing about innovation in education, the need remains,
to concentrate on the factors which appear to favour or
impede durable changes. By understanding these factors,
it becomes feasible to plan for change "in such a way
that the changes made are durable, measurable and similar
to the original version of the innovation." (Huberman,
1973, p.91).

Evaluation of the Usefulness of
Video tape equipment in the
initial training of teachers

This brief listing here provides an indication of the range of uses of television video tape equipment in teacher training that have been explored by the College:

- bringing classroom teaching from schools into college; the teacher may be class teacher, student teacher or lecturer;

- to provide a replayable record of actual classes observed by student teachers in the College demonstration room;

- closed circuit viewing where observers cannot be present (psychological testing, remedial reading, etc.);

- in micro-teaching-type uses either with actual pupils or with students role-playing enabling teacher analysis on replay;

- counselling-type use focussing on personal relationships;

- as an 'aid' in lecture programmes, both in education courses and selected studies;

- for in-service training, when used in either college or school situations;

- for recording off-air (of increasing significance as student teachers are provided with training in the effective use of broadcast television programmes;)

- as a medium in its own right; the equipment being used creatively by student teachers to produce programmes;

- where movie film is required, production is simplified by video taping and then tele-recording into film. Such a technique is useful where several film prints are required for distribution, for example on new teaching methods, perhaps in lieu of refresher courses;

- to enable student teachers and lecturers, through observation of video tape replays, to carry out research into learning and teaching problems;

From this diversity of uses alone, it is felt that some appreciation can be gained of the value of television video tape equipment in teacher training.

Format of Interview Schedule

Introduction -

I am a student from Massey University, working on my M.A.,
thesis in Education.   The project involves an investigation
of the problems experienced with an innovation.   For the
purposes of this study, an innovation would be seen as a new
product which involves the novel application of knowledge
(relative to the people and their situation), deliberately to
bring about some desired specific changes seen to be more
efficacious in accomplishing the defined objectives of the
system.   An understanding of the problems experienced with
the innovation would allow one planning for change to obviate
such problems in the future.

In New Zealand, the case study is on the problems
associated with CCTV as an innovation at this College.

From this and similar interviews with other groups of
the staff personnel using and not using CCTV equipment at
this College, I hope to obtain some data.   This will enable
me to draw up a typology of problems identified by the
interviews which will then be the basis by which I could
proceed with follow-up studies.

Questions: (A) To the regular users -

From the TV booking sheets, I know that all of you have
used video-tape equipment at this College regularly.

Would you mind telling me what problems you have experienced
with regards to its use.   Information will be confidential, so I
hope that you will give me your cooperation.

.   Sub-questions - Could you please tell me now what are the
problems you have identified ?   Are you sure that there are no
other problems.

.   Acknowledgement - Thank you very much for your kind
cooperation. I hope that you will be able to help me in my
follow-up studies for which I will be contacting you later on.
Thank you again.

(B) To the non-regular users

From the TV booking sheets, I know that all of you have used video tape equipment at this College occasionally.

Would you mind telling me what problems you have experienced with regards to its use, and problems which have prevented you from using it more often.   Information will be confidential, so I hope that you will give me your cooperation.

- Sub-questions - Could you please tell me now what are the problems you have identified ?   Are you sure that there are no other problems ?

- Acknowledgement - Thank you very much for your kind cooperation.   I hope that you will be able to help me in my follow-up studies for which I will be contacting you later on.   Thank you again.

(C) To the non-users

From the TV booking sheets I know that all of you here have not used video tape equipment at this College.

Would you mind telling me whether there were some problems which you have experienced which may have discouraged or prevented you from using it ?   If so, what were these ?   Information will be confidential, so I hope that you will give me your cooperation.

- Sub-questions - Could you please tell me now what are the problems you have identified ?

   Are you sure that there are no other problems ?

- Acknowledgement -   Thank you very much for your kind cooperation.   I hope that you will be able to help me, in my follow-up studies for which I will be contacting you later on.   Thank you again.

To determine the group structure for the interview

For the users, reference was made to Table I. The total
hours of individual usage and its frequency was noted.
The difference between the total hours indicated was
worked out. The greater difference score provided the
demarcation for one group from the next.

These groups are worked out as follows : -

X (Hours of Usage)	Differences between X	f.		
40	1	1)		
39	2	1 } group 1		
37	6	1)		
31	2	2 } group 2		
29	6	2		Regular Users
23	1	1)		
22	2	1) group 3		
20	1	2)		
19	5	4) group 4		
14	1	1)		
13	3	1) group 5		
10	1	2)		
9	3	2) group 6		Non-Regular Users
6	2	1)		
4	2	2) group 7		
2	1	2)		
1		2) group 8		

For the 15 non-users, the interview was administered to them
in 3 groups of 4 members and 1 group of 3 members.

QUESTIONNAIRE I

This is a follow up study of the interviews of closed circuit television as an innovation at the College earlier on.

The following have been identified as difficulties or problems experienced relating to the amount of use made of CCTV by the staff members interviewed.

Please rate the statements as to the extent you have experienced them as difficulties or problems by ticking in the appropriate column, your response category. If you wish to change your response, use a cross, then retick the correct response.

e.g. GD   M

The response categories are:

A Great Deal - GD,   Much - M,
Not Very Much - NVM   None - N.

Please refer to the attached notes for clarification of the difficulties or problems.

All data will be treated confidentially

Difficulties / Problems	Rating Scale			
	GD	M	NVM	N
1. Time involvement				
2 Organizing work demands				
3 Shortage of specialist staff				
4 Lack of training				
5 Lack of understanding				
6 Inability to operate equipment				
7 Portability of equipment				
8 Technical difficulties				
9 Financial costs				
10 Departmental staffing				
11 Overcoming initial inertia				
12 Availability of unit				
13 Location of equipment				
14 Experiences with a televised situation				
15 Filming classroom errors				
16 Operational errors				
17 If there are any other significant problems which you have experienced and which have not been covered here, please indicate in this space provided, and tick your response category.				

Thank you very much for your kind cooperation

Notes

1 Time involvement e.g. amount of staff time available;
distribution of staff time.

2 Organizing work demands e.g. planning the subject content
and technical aspects; in forming a team for production
work; in taking a film which relates to one's subject area
requiring series of films for follow up studies; in
involving a large class.

3 Shortage of specialist staff e.g. for setting up and
operating the equipment; editing; advising; unit being
inoperable because the technician was not around.

4 Lack of training in mechanical operation

5 Lack of understanding of educational implications and
production techniques e.g. editing.

6 Inability to operate equipment e.g. fear, inadequacy.

7 Portability of equipment e.g. back-pack

8 Technical difficulties e.g. equipment breakdowns, acoustics,
lighting.

9 Financial costs e.g. costs of tapes

10 Departmental staffing e.g. staff shortage, departmental
size.

11 Overcoming initial inertia e.g. effort to learn how to use
the equipment, try it out and see its possibilities.

12 Availability of unit e.g. its equipment and service not
available as and when required.

13 Location of equipment e.g. convenience of access.

14 Experiences with a televised situation e.g. seeing some
students as being disturbed; lack of group participation
in a microteaching situation.

15 Filming classroom teaching e.g. having no access to finding
out which teacher in a school class is doing the kind of
thing being intended to film, and to whether the teacher to
be televised shows competent pedagogical methods.

16 Operational errors e.g. someone gone off with the keys;
wrong switches on.

QUESTIONNAIRE II

This is a follow up to the previous questionnaire in which you have so kindly participated.

The following list of variables are mainly suggested in the literature to have influence on the process of change and adoption of an innovation. Would you now please rate them as to the extent to which you perceive their relevance in relation to which CCTV in the College has been used by the staff as a whole. This need not be on the basis of your personal experience.

Please tick in the appropriate column, your response category. If you wish to change your response, use a cross, then retick the correct response.

e.g.   GD   M

The response categories are:

A Great Deal - GD,   Much   - M,
Not Very Much - NVM,   None   - N.

All data will be treated confidentially

The extent to which CCTV in this College has been used, is due to the following variables.

	GD	M	NVM	N
1 Its uses are seen to increase the effectiveness of existing practices in teacher education.				
2 It helps considerably towards teaching the subject area one is involved in.				
3 The equipment and its operation is not too difficult to understand and use.				
4 It is possible to use parts of the whole CCTV set up, and to try out its utility in a limited way.				
5 It is consistent with the prevailing values and needs of the College as a whole.				
6 It is relatively easy to demonstrate and evaluate its uses, and let other people know about these.				
7 Its advantages may be seen to outweigh the difficulties or problems involved.				
8 Its potentialities make one feel motivated to want to use it and be willing to make the efforts involved.				
9 It is found to be satisfying and rewarding to the individual user.				
10 It maintains an individual's well-being, e.g. one's status or position; and does not involve risks at personal expense.				
11 The staff in general, wanted the equipment, and was ready to have it.				
12 Administration and faculty attitudes have in general been in favour of the use of CCTV.				
13 The necessary resources for the innovation to take place (e.g. finance, plant, specialist staff) were available.				
14 The physical aspects of the College allowed the equipment to be adequately accommodated and operated.				

	GD	M	NVM	N

15   The organizational structure of the College did not give rise to significant problems.

16   Adequate communication between staff members facilitated knowledge and discussion about the innovation and its adoption.

17   The general goodwill and cooperation among staff members has helped towards its adoption.

18   The tactics used by the personnel concerned to get the innovation implemented maintained high morale among the staff and an atmosphere conducive to the change.

19   All members of the staff were able to participate together in discussions and decision-making about the innovation and the process of change in the College.

20   The general staff was well informed and clear about the purposes and objectives of using CCTV in relation to teacher education, and the direction it is taking in the College.

21   Adequate training was provided, so that a staff member would be able to operate the equipment and perform his new role competently.

22   Where necessary, consideration was given to modifying set aspects of the College programme. In other words, there is flexibility in organizational arrangements.

23   One feels free to use the equipment with no compulsion or undue pressure.

24   There was cooperation and coordination of the College with other institutions such as the Education Department.

25   CCTV has adequately proceeded through the stages of the developmental and implementation phases to be now well-established as part of the College programme.

Thank you very much for your kind cooperation

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