DIMENSIONS AND DETERMINANTS OF
SCHOOL WORKFLOW STRUCTURE

by

MICHAEL ANTHONY MARSHALL

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Department of Educational Administration

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date March 3, 1978
ABSTRACT

The study was an investigation into the workflow structure of junior and senior secondary schools. It constituted an attempt to develop a conceptual framework for identifying dimensions of school workflow structure and possible determinants thereof.

The study incorporated seven stages: (1) development of a theoretical model of possible determinants of school workflow structure, (2) adaptation and refinement of an existing instrument to measure school workflow structure in junior and senior secondary schools, (3) use of the instrument to identify underlying dimensions of school workflow structure, (4) analysis of the relationships between variables of organizational context and school workflow structure, (5) examination of a particular orientation of professional staff towards students, namely, the degree to which staff are concerned with the control of pupil behavior, (6) analysis of the control orientation, or Pupil Control Ideology (PCI), of professional staff with respect to school type, size, and school district affiliation and, (7) clarification of the relationship between pupil control ideology and school workflow structure.

School workflow structure was measured by Kelsey's Diversification of Workflow instrument. This instrument is
based on the notion of diversification of workflow structure in schools and is an adaptation of Perrow's concept of technological routinization. Two separate major dimensions, 'Diversification of Control' and 'Diversification of Equipment', were found to underlie workflow structure.

School districts and school types (junior or senior secondary) differed significantly on school scores on both dimensions. School types were significantly different in size but when size was controlled for type, size was not associated with scores on either dimension.

PCI scores differed significantly across school districts in only two of eighteen pairwise comparisons. Junior secondary schools and senior secondary schools were, however, significantly different with respect to their mean PCI scores. Size of school, controlled for type, was not significantly associated with Pupil Control Ideology scores.

School mean PCI scores and Diversification of Control scores showed a significant positive association in junior secondary schools. The attempt to explain this finding and the evident lack of relationship in senior schools led to the discovery that the amount of within-school variance on the PCI scores may be a mediating variable between school PCI score and Diversification of Control. When PCI variance is taken into account, prediction of the probable extent of diversification of control is possible for low variance schools but not for high variance schools. PCI scores were
also significantly inversely related to Diversification of Equipment in junior secondary schools.

The findings were incorporated into a revised model of possible determinants of school workflow structure. The revised model carries implications of a theoretical, methodological, and practical nature. The theoretical implications are found in the clarification of the nature of the relationships among dimensions of school workflow structure, variables of organizational context, and a psycho-sociological variable. Methodologically, the results indicate that, while it is possible to take an instrument such as Kelsey's, which was designed for comparative research, and apply it to a geographically restricted study, it is wise in such cases to consider using the unrefined form of the instrument in order to test not only the applicability of the instrument but also its initial conceptualization. Finally, the relationship of pupil control ideology to school workflow structure has implications for school principals and for the recruitment and placement of professional staff.
Acknowledgements

First and foremost, I would like to thank Dr. J. G. T. Kelsey, research supervisor sans pareil, whose continued patience, constructive criticism, incisive comments, and unflagging effort warrant recognition far beyond that normally accorded a research supervisor.

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The study would not have been possible without support from the four district superintendents who so kindly allowed me access to the schools in their districts. My gratitude is extended to them and to the thirty-four principals who took time out of their busy schedules in order to assist me in the research. Thanks, too, to the 943 teachers who participated in the study.

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Chapter 1
INTRODUCTION

General Perspectives

One view of schools which has seen extensive use as a basis for research into the ways in which schools differ is the view that schools are organizations (e.g. MacKay, 1964; Bidwell, 1965; Corwin, 1967; Anderson, 1970). Various facets of schools as organizations have been considered—unifying social themes (Willower and Jones, 1963), bureaucracy (MacKay, 1964), student alienation (Anderson, 1970), school climate (Halpin and Croft, 1963), staffing ratios (Holdaway, 1972), and school size and structure (Adams, Kimble, and Marlin, 1970). Only recently has attention been given to those aspects of schools which are directly concerned with the actual work of the school or to the structure within which the work is carried out (Adams et al., 1970; Lam, 1971; Kelsey, 1973; Stryde, 1973).

One way to consider the structure within which school operations are conducted is to view it as regular patterns of activities, that is, as activities which occur in other than random fashion. Organizationally, this non-randomness is represented by rules, regulations, policies, or established practices serving to guide the activities.
Moreover, it is possible to identify several regular patterns of activities, that is, several structures within a school—"an administrative structure, a workflow structure,... or a curriculum structure" (Kelsey, 1973: 41). As Kelsey points out (1973: 41), "To distinguish between structures is not easy, but,... it is at least possible to distinguish between an administrative structure and the structure of the workflow of a school organization."

Administrative structure refers to those patterns of activities dealing with the administration of the school. Workflow structure concerns the way that the work of the school in educating pupils is carried out as expressed in the rules, regulations, policies, and established practices of the school.

Administrative structures in schools have been examined in considerable depth. Focus on the workflow structure has been less evident, however. To date, no firm determinants of workflow structure have been identified, nor have any discrete dimensions of workflow structure been found.¹ The relationship of administrative structure to workflow structure has been examined (Kelsey, 1973) and found to be of little use in identifying determinants of workflow structure.

¹ Kelsey (1973) identified two dimensions of workflow structure but their generalizability has yet to be tested. See Chapter 2 for discussion.
structure. It seems reasonable to suggest that an understanding of workflow structures is important for the study of how schools operate. Part of that understanding might usefully involve a consideration of what determines workflow structures. In view of the inconclusive findings noted above, it would appear that other areas need to be explored in order to find variables which are related to, and may be determinants of, school workflow structure.

One area of exploration, yet unconsidered in the research as possible fertile ground for study in connection with workflow structure, lies beyond the formal structures of the school as an organization. It may be argued that workflow structure is established not only to facilitate the attainment of school goals, but also in response to certain views or orientations held by those in the organization who are most directly concerned with the workflow—the school's professional staff. That is, the psycho-social domain may be a profitable area for research in connection with workflow structure. The rationale for this relationship will be more fully developed in Chapter 2, but, as preface, it appears reasonable to suggest that a relationship may exist between the views of educators with respect to students, for example, and the policies, rules, regulations, and established procedures by means of which educators deal with the education of those students, i.e., the workflow structure by which the work of the school gets done.
The present study was an attempt to further the understanding of how schools operate by identifying underlying dimensions of school workflow structure along which schools may be differentiated and by clarifying the nature of the relationship between orientations of the professional staff with respect to what they felt was important in the school and the workflow structure.

Therefore, the identification of a topic of major importance to school professional staff was an immediate first step. A search of the literature revealed that the control of pupil behavior was a topic of major concern for school professional personnel. The concern was identified in a 1963 study (Willower and Jones, 1963) and later researched in considerable depth (Willower et al., 1967). The orientations that educators have with respect to the control of pupil behavior were given the title 'Pupil Control Ideology'. In view of the widespread concern expressed by teachers with respect to pupil control, the term 'ideology' is particularly appropriate since these control orientations constitute a 'systematic set of attitudes and beliefs' (L. B. Brown, 1973:10). Since 1963, the concept labelled 'Pupil Control Ideology' (PCI) has been examined extensively, particularly in the United States. Studies have examined the relationship of PCI to teacher dogmatism (Willower et al., 1967), to student alienation (Hoy, 1972), to teacher
behavior (Helsel and Willower, 1974), as well as to numerous other variables. In each case, however, the studies have related PCI to other individual or group variables or to the school social structure or 'climate'. No study has yet attempted to examine PCI and the relationship between it and the more formal structures of the school, in particular the workflow structure. That such a relationship may exist was a fundamental argument for the present study. Willower and Jones (1963) identified pupil control as a major theme in their junior high school study. Organizational studies dealing with manufacturing organizations have shown that control over raw materials is of concern (Bakke, 1959; Pugh et al., 1968), and the one study which has examined school workflow processes (as opposed to classroom workflow processes) identified two workflow dimensions—both of which have large control components (Kelsey, 1973: 167-169). Therefore, it might reasonably be argued that the degree to which school staffs are concerned with the control of pupil behavior will be related to the school's workflow structure.

Purpose of the Study

The purpose of the study was to examine school workflow structure in an attempt to identify underlying dimensions along which schools may be differentiated and to examine the relationship of such dimensions to certain variables of
organizational context and to the Pupil Control Ideology of the school's professional staff.

**Significance of the Study**

The major significance of the study lay in two areas—theoretical and methodological. The theoretical contribution was found in an attempt to link the psycho-sociological concept of an ideology with the organizational concept of workflow structure, thereby providing an examination of the relationship between group concerns and one of the formal structures of the organization in which the group works. In addition, the conceptual framework expands previous work on the nature of influences which may constrain actual classroom practices and how these influences might differ according to the type of school.

Methodologically, the study's potential was in the extension of the use of a workflow instrument to discriminate among types of schools. An instrument with the potential to differentiate among schools according to their workflow structures would be a useful tool for comparative purposes.

In addition to the areas of major significance, the study also had descriptive and practical potential—in the view it provided of what actually takes place in schools, and in the implications for the practitioner which could
emerge from clarification of the extent to which teacher views are associated with formal workflow structure.

Delimitations and Limitations of the Study

The study was restricted to an examination of the workflow structures and professional staff pupil control ideologies in twenty-two junior secondary and twelve senior secondary schools located in four school districts in a West Coast metropolitan area of approximately one million population. The populations of the school districts ranged from approximately 55,000 inhabitants to 132,000 inhabitants. The two largest districts were geographically contiguous as were the two smallest districts. The two contiguous pairs were separated from each other by one intervening school district which was not included in the sample. The main limitations of the study were the relatively small sample sizes of the junior and senior schools and the consequent limitations placed on the statistical analyses.

The Organization of the Thesis

This chapter has outlined the general perspectives of the study, its purpose, its significance, and its delimitations and limitations. Chapter 2 deals with the theoretical perspectives of the study, reviews the pertinent
literature and presents the conceptual framework. The design of the study and the definitions of terms are presented in Chapter 3, followed by the findings in Chapter 4. Chapter 5 contains a discussion of the findings and the final chapter consists of a summary and an elaboration of the conclusions and implications of the study.
The focus in the present study is on the way schools structure or regulate their workflow and on how this regulatory structure might be related to the orientations of the professional staff. The study of administrative structures has been undertaken on many occasions (Mann, 1965; Katz and Kahn, 1966; Thompson, 1967) but no study has yet established a definitive relationship between administrative structure in schools and how schools structure their workflow. The study of administrative structure in general appears to have contributed little to furthering our understanding of other variables in organizations (and in schools in particular). Robbins and Miller (1969) have gone so far as to question the validity of the concept of structure itself in light of the relative paucity of generalizable findings.

Kelsey (1973) has suggested that it may be profitable to examine a different kind of structure concerning the educational operation of a school. He suggests that it is reasonable to consider a structure of the workflow itself. Such a notion finds support in the observations of those who note that what may occur as a matter of course in one school
is simply just not done in another school. This difference in permitted activities reflects the different ways in which schools structure their daily operations—that is, in the ways that their workflow structures differ. Kelsey (1973) demonstrated that it is possible to measure a structure specifically associated with school workflow, but he was unable to suggest convincing determinants of such structure.

An examination of the theoretical rationale behind the instrument that Kelsey constructed to measure school workflow structure suggests that a key determinant of the workflow structure may be the ideologies of teachers regarding the students with whom they work. Further amplification of this notion requires an examination of the concepts involved in studying school workflow structure—particularly involving the derivation of workflow structure from the concept of organizational technology. Accordingly, the next section of this chapter deals with the concept of technology and describes the Kelsey study in greater detail. A subsequent section examines work done on dominant ideologies of teachers as probed through the concept of Pupil Control Ideology. A third section discusses the conceptual framework for the relationship between workflow structure and Pupil Control Ideology.
ORGANIZATIONAL TECHNOLOGY AND WORKFLOW STRUCTURE

If schools are considered as people-processing organizations where raw materials (pupils) enter, are processed, and then 'outputted' as finished products (graduates) (Charters, 1964), then, as Perrow has pointed out, the way in which the raw material is viewed plays an important part in determining the way in which it is processed (Perrow, 1967:197; 1970:73-80). Perrow has used the term 'technology' to mean 'the work done in organizations' (1967:194), that is, the application of techniques to the problem of altering raw materials (1967:195). In other words, technology is what is done in the workflow processes. It is to a consideration of the concept of technology and its relationship to workflow processes and structure that the discussion now turns.

The term 'technology' has been used in various ways in organization theory. Not all of the ways in which the term is used are consistent with the way that it is used in ordinary speech (i.e. to focus on equipment). Perrow's definition is particularly applicable to service organizations such as schools (where the raw material is people rather than objects). As Perrow indicates, raw material need not be inanimate in nature—indeed it may be human, animal, inanimate, or symbolic (1967: 195).
Perrow's Concept of Technology

An important point might be made at this juncture. Perrow indicates that the kind of technology used will likely be determined by the state of the art with regard to analyzing the characteristics of the raw materials (1967: 196-7). Here, he is referring to the perceived characteristics of the materials. The point is that perceptions of raw materials are probably closely related to the technology by which the raw materials are processed.

There are two characteristics of the raw material which are particularly important in terms of the perceptions of those who are involved in processing it—its understandability and its stability and variability (1967: 197). Greater understandability of the nature of the object means better control and more predictability and efficiency during the workflow process. Stability and variability refer to the degree of standardization with which the raw material may be treated, that is, the extent to which the activities of the organization may be routinized.

The two characteristics may be viewed as technological dimensions, a schematic representation of which appears in Figure 1 (Perrow, 1970: 79).
### Variability of Materials

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<tr>
<td>Well Understood (vocational School training)</td>
<td>43</td>
</tr>
</tbody>
</table>

**Figure 1**

Raw Material Variables

(Perrow, 1970: 79)
The placement of an organization in one or another of the cells is determined by the perceived understandability and the stability and variability of the raw materials. Examples of various types of institutions which might reasonably be placed in particular cells are provided in Figure 1.

**Technology and Schools**

In the case of schools, it is possible to place certain kinds of schools in different cells. Schools which have staffs who perceive students as all needing the same courses, the same type of control, and the same instruction, and who therefore understand students very well (they are all alike, therefore uniform and stable) may be placed in cell four. In this case, all that is necessary is the appropriate degree of repression to keep students under control—students are viewed as needing discipline and to learn to respect adults (Perrow, 1970: 80). At the other extreme, other schools may have staffs which view each student as a unique individual with his own particular problems, and which feel that perhaps they do not understand their students well at all (possibly because they vary so greatly). These schools would be more appropriately placed in cell two (Perrow, 1970: 79). The main point is that the perceptions of teachers regarding their students will
probably influence the kind of technology that is set up in the school to process these students.

Diversification of Workflow

The concept of technology as defined by Perrow has not, to this point, been widely operationalized or extensively used with respect to schools. The only work to date which has applied Perrow’s concept of technology to schools (as opposed to classrooms) and attempted to measure technology in schools, is Kelsey’s 1973 study. This study took Perrow’s definition of technology and applied it in a comparative study of secondary schools in Edmonton, Alberta and in the West Riding of Yorkshire, England. Some slight definitional modifications were necessary in order to accomplish this. Where Perrow indicated that it was possible to distinguish among organizational technologies in terms of their degree of routinization, Kelsey argued that, since some routinization is unavoidable in schools, a more appropriate way was an examination in terms of the extent to which the school catered to a diversity of talents and interests (Kelsey, 1973: 56). Kelsey created a 'Diversification of Workflow' instrument which he subsequently applied to his sample of secondary schools. His findings warrant further discussion.
Dimensions of Diversification of Workflow

Kelsey specified six elements of school workflow which might be diversified. These six elements (equipping, sequencing, placement of pupils, control, evaluation and reporting, and scope) provided the basis for the attempt to identify dimensions of workflow structure. Upon analyzing his data, Kelsey was able to identify two dimensions which appeared to underlie the diversification of workflow in his sample. These he labelled Acceptance and Personalization. He characterized Acceptance by the hypothetical statement 'Our raw materials are people--diverse and non-uniform--and we will not force them into an institutionalized mould of behaviour but, rather, accept their diversity' (Kelsey, 1973: 169). Personalization, on the other hand, Kelsey saw as reflected in a concern for the many aspects of the raw materials as people (Kelsey, 1973: 169). In the first instance, the emphasis is placed on the acceptance of diversity, in the second it is on the personalization of non-instructional aspects of the workflow. A brief explanation might serve to clarify this distinction.

Acceptance implies that the school recognizes the independence of today's young people and it indicates that teachers need to be prepared to allow students to run their own lives out of the classroom (Kelsey, 1973: 248). Acceptance is characterized by a lack of restriction on students--particularly during their out-of-classroom time
The focus of Personalization is on a high degree of personal interaction between teacher and student, and on flexibility in scheduling and evaluation procedures, accompanied by a wide interest in the student and his work outside the classroom as well as inside (Kelsey, 1973: 169). Both are dimensions of workflow structure in that they describe different ways in which a school's workflow processes might be diversified. As indicated above, these different workflow structures are seen as resulting from different views of what the predominant characteristics of students are.

Limitations of the Kelsey Study

Certain limitations of Kelsey's study should perhaps be discussed. First, the measurement of the workflow structure dealt only with non-classroom items. The argument is that it makes little sense to consider classroom teaching activities without first considering the structure within which these activities take place (Kelsey, 1973: 4,5). Second, Kelsey's sample was quite small (twelve Edmonton schools, nine West Riding schools). Such a small sample size indicates that to regard Acceptance and Personalization as the sole dimensions underlying the workflow structure may be premature until further studies have either confirmed or refuted this conclusion. Third, Kelsey made no attempt to distinguish
between the junior and senior levels in the schools. His was a comparative study of different school systems and was not concerned with making such distinctions. It should be clear, therefore, that much study remains to be done in regard to these three considerations.

This part of the chapter has considered the concept of technology and the derivation of the notion of diversification of workflow structure from the original conception of organizational technology advanced by Perrow. At least two important tasks are yet undone with regard to workflow structure—confirmation of Kelsey's instrument, and the identification of determinants. The first of these requires further empirical work using Kelsey's conceptualization. The second involves the development of a convincing theoretical link.

**Determinants of Workflow Structure**

To date, no firm determinants of school workflow structure have been identified. Kelsey (1973: 225-227) indicated that size of school appeared to be a determinant of workflow structure and that local school district may play a role as a determinant (although this association was less clear). It was noted earlier that the views or orientations of persons involved in effecting changes in the raw material may largely determine the kind of technology or
workflow processes employed to process the raw materials. The patterns instituted to regulate the workflow processes were referred to as workflow structure. Some deterministic relationship between the views and orientations of professional staff concerning students and the workflow structure of a school may be logically posited. The Pupil Control Ideology of staff was identified earlier as a possible determinant of workflow structure. The concept of Pupil Control Ideology is discussed in the following sections.
PUPIL CONTROL IDEOLOGY

This section of the chapter is divided under four headings— the Background to Pupil Control Ideology, Identification of Pupil Control Ideology, The Control Typology, and Research Using Pupil Control Ideology.

Background to Pupil Control Ideology

Carlson (1964: 262-276) has developed a typology of service organizations which classifies them according to four categories. Schools are considered as belonging to what Carlson identifies as 'domestic' organizations (Type IV organizations). Domestic organizations are those which do not need to 'forage' for clients—the client has no choice but to participate. At the same time, the organization has no choice but to admit the client. Other organizations of the domestic variety include mental hospitals and prisons. The Type IV organization has been shown to focus on the control of client behavior as one of the major concerns of those occupying non-client roles in the organization (Goffman, 1961; Willower and Jones, 1963: 109). In particular, the attitudes of teachers (including counsellors and administrators) towards the control of pupil behavior have been extensively studied since Willower and Jones first
identified pupil control as the major integrative theme in a large American junior high school (1963: 107). The term 'Pupil Control Ideology' or 'PCI' has been used to refer to teacher attitudes toward the control of pupil behavior, a Pupil Control Ideology form has been developed (Willower et al., 1967), and this form has seen extensive use as a device for measuring teacher attitudes toward the control of pupil behavior. This ideology has been conceptually and empirically linked with various other concepts that are relevant to examinations of public schools.

Identification of Pupil Control Ideology

The identification of pupil control as a major topic of concern to teachers came as a result of a study conducted in 1962 (Willower and Jones, 1963). The original purposes of that study were to describe the social behavior in an educational organization and to apply and develop concepts which might be theoretically useful and therefore lead to future research. The study was carried out in a Pennsylvania junior high school of 1600 pupils and seventy-two teachers. The study began in April, 1962 and gathered large quantities of data through observation and interview during the following fourteen months. Upon the analysis of the data, the researchers were able to identify pupil control as an integrative theme in that particular school. They noted that
older teachers appeared to be generally more conservative in outlook and seemed to place greater stress on the control of pupil behavior than did their younger colleagues. Willower and Jones saw that that the theme of pupil control seemed to fit very well with the general 'climate' of the school and the behavior of its teachers in the halls, assemblies, and cafeteria.

Since they were dealing with only one school, located in an area of high unemployment and low income, the investigators were unable to generalize with any degree of certainty, but they were convinced that the theme of pupil control was appropriate in the school which they were studying. Referring to studies of mental institutions (Goffman, 1961), and the displacement of goals that was evident therein, they concluded that the general emphasis on control goals could not help but displace some of the instructional goals in much the same manner as control goals displaced treatment goals and rehabilitation goals in mental institutions and prisons respectively.

A further observation was that younger, idealistic, more liberal teachers have to engage in adaptive behavior as a result of the socialization process that they undergo in the school. Three possibilities exist in regard to this type of behavior. The beginning, more idealistic teacher may keep quiet about his beliefs and 'go along' with his older colleagues, he may engage in open conflict with them, or he
may withdraw from the organization. In the first instance, his energies and talents may be directed towards some other part of the school's activities such as athletic coaching or drama club activities. Willower and Jones also noted that the scapegoating of students appeared consistent with pupil control as a dominant theme. Scapegoating could also be a form of adaptive behavior in order to gain acceptance. Such behavior provides a relatively harmless outlet for aggressive feelings against pupils, allows for peer approval to be given, and helps relieve guilt feelings about not having done a better job with pupils.

The Control Typology

Following the Willower and Jones study, further research continued the examination of pupil control and attempted to explain some of the differences involved in the forms of control in various schools and by different teachers, administrators, and specialists (Willower et al., 1967). To this end, the first step in the development of a conceptual framework was the specification of a control typology. The authors adapted Gilbert and Levinson's mental hospital control ideology typology (Gilbert and Levinson, 1957) and developed prototypes of orientations toward pupil control. At one end of the control continuum is an ideological extreme identified as 'custodialism', at the
other end, an ideological extreme labelled 'humanism'. The two extreme types of school described below are not found in reality but are useful as models in describing the ideological aspects associated with the ends of the control continuum.

The custodially oriented school is typified by the rigid, traditional, highly controlled school whose primary concern is the maintenance of order and the control of pupil behavior. Students' appearance, behavior, and backgrounds serve to stereotype them and they are viewed as irresponsible and undisciplined. They are, therefore, in need of control and this control is possible through the use of punitive sanctions. Teachers make no attempt to understand pupil behavior but view it in moralistic terms, interpreting misbehavior as a personal affront. Relationships are impersonal, pessimism and mistrust abound, power and communication flow downward, and status distinctions are rigidly maintained.

The humanistic orientation finds its model in a school where teachers view it as an educational community. Learning takes place through interaction and experience, student behavior is viewed in more psychological and sociological terms, close personal relationships are encouraged, teachers desire democratic classroom climates, communication is a two-way process, status and rules are flexible, the withdrawn student is considered as much of a problem as is
the overactive troublesome one, and the emphasis is on self-discipline rather than externally imposed discipline. It should be remembered that schools in reality will fall somewhere between these two 'ideal' types and will quite possibly exhibit characteristics of both to a greater or lesser degree.

The following section deals with some of the research which has been conducted using the Pupil Control Ideology concept. The note should perhaps be made at this point that a high PCI score (maximum 100) is associated with a custodial ideology.

Research Using Pupil Control Ideology

As previously indicated, Pupil Control Ideology has been linked to many concepts relevant to studies of public schools. In the original studies conducted by Willower et al. (1967), the findings supported the hypothesis that those persons directly responsible for the control of unselected clients would be more custodial in their control ideology than those less directly responsible. The results showed that principals are less custodially oriented than are teachers. Similarly, counsellors tend to be less custodial than teachers in their orientation to pupil control. In other words, there is a relationship between school position and PCI.
Other findings were cited in the Willower et al. (1967) study. Secondary teachers were found to be more custodial than elementary teachers, secondary principals were found to be more custodial than their elementary counterparts, open-minded teachers turned out to be more humanistic than closed-minded ones (at all levels, in all positions), and teachers with more than five years of classroom experience were seen to be more custodial than those with five or fewer years of classroom experience. The prototype of the custodial educator was found to be the older, experienced, male secondary teacher and the humanistic educator prototype was identified as the younger elementary principal who had done graduate work above the M.A. level.

Student teachers have been shown to develop more custodial orientations as they are socialized during their student teaching (Hoy, 1967: 154). Elementary schools have been examined with regard to their 'climates' and found to be more humanistic with regard to the PCI continuum when they have relatively open climates (Appleberry and Hoy, 1969). Helsel (1971a) reported that traditionalism in educators' values was positively related to custodialism in their pupil control ideology. Hoy (1972) has found custodial PCI scores in schools to be directly linked to student sense of powerlessness and normlessness. Hoy indicates that PCI may be a crucial factor mediating the relationship between the school and the student.
Pluralistic ignorance is a term used to describe a shared misconception. Packard and Willower (1972) discovered that teachers and principals believe each other to be more custodial in their pupil control ideology than is in fact the case. Counsellors estimated both teachers and principals to be more custodially oriented than self-reports on the PCI form indicated. Teachers, on the other hand, were quite accurate in their perceptions of counsellors' PCI, while principals erred on the humanistic side in their estimation of counsellor PCI scores.

Teacher job satisfaction has been linked to pupil control ideology and found to be positively correlated with the degree of congruence between teacher-held PCI and the teacher's perceptions of colleagues' PCI (Yuskiewicz and Willower, 1973). Other findings supported previous studies indicating greater custodial orientation in secondary school teachers and in experienced teachers. The overattribution of custodialism found by Packard and Willower was also supported in this later study.

The two ideological extremes are useful in terms of thinking about the way in which teachers and principals view pupils. The relationship between the pupil control ideology of teachers and their classroom behavior as seen by their pupils has been examined by Helsel and Willower (1974). The prediction that the relationship would be positive was
supported, although the variance accounted for was limited (1974: 121). The authors also take care to note that they were measuring pupil perceptions of teacher behavior.

To date, then, much work has been done concerning Pupil Control Ideology. The foregoing should amply demonstrate, however, that PCI studies in general have focused on the relationship of PCI to other teacher attributes or characteristics, student performance or attitudes, or school sociological variables.¹

It is interesting to note that the Helsel and Willower study mentions that schools may be viewed as people-changing organizations whose personnel work with humans as raw materials (1974: 114). This notion derives from the work of Perrow (1967, 1970) and is pertinent to the present study. Helsel and Willower failed to pursue the idea that schools effect changes in their raw materials except insofar as the

change processes are related to teacher pupil control behavior. Helsel and Willower chose only to examine teacher pupil control behavior rather than to include all those aspects which might be viewed as part of 'technology' in a school. In other words, they indicated and lent support to a link between PCI and technology in a school but they were limited in what they chose to examine. Much more than teacher pupil control behavior may be included under the heading of 'technology'. In addition, it has been argued that it makes little sense to study teacher classroom behavior without taking into consideration the constraints that the school's workflow structure places upon such behavior (Kelsey, 1973: 4-5). One might also note that the descriptions of the two extreme types of schools (custodial and humanistic) involve many items which are structural in nature (e.g. delineation of relationships, communication channels, maintenance of status and rules, control methods). Many of these considerations may easily be viewed as being associated with particular orientations of professional staff regarding the control of pupil behavior. How the concepts of pupil control ideology and school workflow structure might be related is discussed in the following section.
CONCEPTUAL FRAMEWORK

In the preceding sections, both workflow structure and Pupil Control Ideology have been discussed in some detail. It has been pointed out that PCI is one means of determining the extent to which a school staff is concerned with the control of pupil behavior. Although the concept and the PCI form have been widely used, it was noted that no study has linked PCI to the structure of the activities which go on in a school. The point was made that such a link may exist—control has been shown to be of major importance in schools and previously identified dimensions of workflow structure have been found to have large control components. The lack of studies dealing specifically with an examination of school workflow processes was mentioned and it was pointed out that schools could be studied in terms of their degree of workflow diversification rather than in terms of their workflow routinization.

Schools may be viewed as people-processing, work organizations. To apply a concept of technology which stresses the importance of the perceived characteristics of the raw materials is particularly appropriate in this type of organization. The view held by many educators that each pupil is an individual with his own particular needs, mode of learning, and rate of learning, has been reflected in
recent years by certain innovative practices (team-teaching, programmed learning, special classes, etc.) designed to enable each pupil to realize his full potential. These aspects of workflow, then, have been established as a result of a particular view of the raw materials. Perrow (1970) analyzed two institutions for delinquents in terms of this notion and used the degree of routinization as the measure of the technology in the institution. As indicated earlier, it may be more appropriate in schools to examine the extent to which schools cater to the diversity in the raw materials. If a school is operating under the view mentioned above, its educational program should be offered in a diversified manner consistent with this view. If the opposite view (i.e. students are all alike and need the same curriculum and instruction) is the one under which the school is operating, then there is no need for a diversified technology.

From the preceding, it follows that the extent to which diversification is evident in the workflow could be one measure of a school's workflow structure. This is how Kelsey dealt with school workflow structure and it is argued that this approach is appropriate here. With regard to the perceived nature of the raw materials, it has been pointed out that the ideology of teachers with respect to the control of pupil behavior has been linked with the pupil control behavior of teachers (in their classrooms). The
argument is that a view of pupils which concerns itself largely with the control of their behavior (and pupil control was found to be a major concern) will be linked to the workflow structure set up to guide the processing of these pupils in much the same way that it is linked to teacher behavior. This argument is developed in the following section.

**PCI and Workflow Structure**

Individuals may normally be expected to act in accordance with their beliefs. When they cannot so act, at least three types of action are available—modification of beliefs (not usual), opposition to the course of action prescribed, or sublimation of the belief to the importance of the task. In general, people attempt to delineate procedures, policies, rules, and other action-governing mechanisms in accordance with their own particular ideology. Ideologies may be thought of as views of the world, and rules and norms may be viewed as attempts to structure the individual's actions in accordance with the wishes of those most influential in a particular group or organization. With reference to schools, the most influential parties in terms of affecting what transpires are teachers and administrators. To be sure, there are other groups who have a say in what curriculum is offered and these groups may
exercise some degree of control over the school's activities, but the major impact on the school's workflow structure (i.e. the arrangements within which the curriculum is offered) cannot come from other than the school's professional staff.

If teachers and administrators are considered as the most influential parties in the establishment, maintenance, and modification of school workflow structure, the way in which these people view their students (the school's raw materials) will have a direct bearing on what workflow structure is in order for a particular school. If the view is held that no homogeneous grouping is needed, then there will be no homogeneous grouping in that school. There is no particular difficulty in visualizing the link between beliefs and actions or between ideologies and workflow structure. Nor is there a difficulty in seeing a link between ideology and the diversification of workflow processes. If the staff holds the view that more diversified offerings, more equipment, greater mobility, and the like are required in order for the school to operate in accordance with the staff ideology, then the likelihood is that these provisions will be evident in the school, to the extent that the school as an organization is free to control these aspects.
Pupil Control Ideology and Diversification of Workflow

The main point relevant to the present study is that it may not be a more general ideology of education which is linked to the diversification of workflow in a school, but a particular type of ideology, namely, that concerned with the control of pupil behavior. The studies on Pupil Control Ideology have demonstrated clearly that this ideology is an important component of educators' views of students. This emphasis on control cannot help but find outlet in the structure of activities found in a school. Not only is control of the raw material an important aspect of technology in both object- and people-processing organizations, but it can also be seen to be present in large measure in both of the dimensions underlying diversification of workflow (Kelsey, 1973: 167-169).

Even if one considers the six elements conceptualized in Kelsey's study of equipping, sequencing, placement, control, evaluation and reporting, and scope, the argument may be made that elements of control could be present in any, or all, of them. For example, equipping might be seen in some ways as being responsive to a concern for pupil control. One of these ways might be in the amount of equipment available for student use. A control concern might be reflected in one of two ways here. First, very little equipment might be permitted students (since they can't be trusted) or, second, enough of certain types might be
available so that each pupil is assigned an item of equipment for which he is responsible (ensuring control in a different manner).

The degree to which a concern with control is present in the sequencing aspect of workflow might be reflected in how free students are with respect to their time of arrival at school, their freedom in course selection, change, or withdrawal from, and the variety that exists in times and types of personnel movement about the school. The placement of pupils could reflect a control concern in two ways. It is possible that a high concern with control might result in homogeneous groupings—in order to keep all students of a certain type together for greater ease in handling them. On the other hand, the opposite might hold in that by carefully separating students of a problem type from each other (i.e. making certain that they are not in classes together), such students are easier to manage by virtue of being segregated from others of that type.

With regard to the element of control itself, little need be said. Policies and procedures regarding pupil attendance, movement, spare periods, detentions, and so on have an obvious connection with a control concern. Evaluation and reporting may reflect a control concern to the extent that behavior is permitted to influence grades or is itself reported on the report card. Scope (the breadth of the educational offering) may be seen to possess a control
component in the number of required courses, amount of class time used for non-instructional purposes, number of spare periods, club availability, and function (or existence) of the homeroom teacher. Schools reflecting strong custodial ideologies may again evidence this in two ways. First, the provision of clubs, house games, and spare periods may be in order to keep students under more supervision. On the other hand, the absence of these may reflect an unwillingness to have large numbers of students (as in house games) in situations where control might be difficult.

The above illustrates some of the types of relationships which might exist between PCI and the elements of the workflow. The development of a model incorporating these relationships follows.

A Model of Workflow Structure

The view held by teachers of their raw materials may be seen as a link between the socio-cultural environment and the workflow structure. Schools exist in an environment which acts as a frame of reference for them. Similarly, teachers also use the environment as a frame of reference, particularly if it is the same one in which they grew up (Kelsey, 1973: 47). Teachers may therefore be regarded as intermediaries who have a significant part to play in the translation of the views held by the greater society. In
particular, following the argument raised in the preceding section, teacher PCI may well mediate between the environment and the school workflow structure. The argument is that the environment does not directly influence school workflow processes but, rather, has its influence translated and mediated by intermediaries. Three of these intermediaries may be seen as the Ministry of Education, the local school system, and the types of schools established. A fourth, the professional staff, differs from the first three in that it is not a structural, organizational consideration but a more individual, psycho-social consideration which is directly involved in the establishment, maintenance, and modification of the school's workflow structure. The relationships of the mediating variables to the socio-cultural environment and workflow structure are easily represented diagrammatically to provide a model of possible determinants of workflow structure (Figure 2). The model derives from Kelsey's Model of Organizational Constraints (Kelsey, 1973: 224).
Local system and size of school are included on the basis of Kelsey's results as mentioned earlier. Since the Ministry of Education is a common denominator for districts in the present study, it is considered to be included in the environment. The inclusion of school type results from a consideration of the differences in the nature of client groups in different school types and the concomitant likelihood of different workflow structures being established. Finally, the link between school type and PCI
has been made on the basis of findings previously mentioned. It should be recalled that secondary school teachers and principals alike were more custodial in orientation than their elementary counterparts (Willower et al., 1967: 20). We might reasonably expect that other school types would show differences in the PCI of the professional staffs.

Assumptions of the Model

The following assumptions underlie the model illustrated in Figure 2.

I. schools exist in a socio-cultural-economic environment which impinges in some way on all processes in the school

II. a school belongs to a parent organization and is of a particular size and type

III. each school uses a technology which may be different from that of other schools in the same jurisdiction, and which is probably different from that of other schools in a different environment

IV. the ideology of teachers is consistent with the range of ideologies possible in the environment and may operate as a screen or filter between the environment and the school workflow processes

The first two assumptions are relatively self-evident, however, they are provided since an important consideration
is the way in which the environment might impinge on a particular school structure. Also, failure to recognize that different local systems may be reflected in different workflow structures at the individual school level would be a severe lack in any model purporting to represent influences on school workflow structure. The third assumption is essential to the consideration of a separate workflow structure and to the comparison of workflow structures in different schools. The second part of assumption III, while not essential to the present study, provides recognition of the role that might be played by differences in concepts of education in varying socio-cultural-economic environments.

Summary

Building upon the theoretical perspectives of the study and the relevant literature, the conceptual framework presented here suggests that pupil control ideology may be a determinant of school workflow structure. A model of possible determinants of school workflow structure has been developed and the underlying assumptions identified. The next chapter describes the design of the study, including the definition of terms and the statement of the problem in more precise terms.
Chapter 3
RESEARCH DESIGN AND METHODOLOGY

This chapter identifies the relevant variables and the methods by which they are measured, outlines the problem in greater detail, and discusses the collection of data and analytical procedures.

DESCRIPTION OF VARIABLES AND STATEMENT OF THE PROBLEM

The research problem addressed in this study involved a consideration of those variables identified in the preceding chapter and of certain of the relationships among them. The descriptions and operational definitions of the variables are provided below, followed by the statements of the problem and its component sub-problems.

The Variables: Description and Definition

In the study, one organizational variable, one psycho-sociological variable, and three variables of organizational context were examined. Diversification of Workflow Structure was the organizational variable, Pupil Control Ideology was the psycho-sociological variable, and size of school, type of school, and school district affiliation constituted the
contextual variables examined.

**Workflow Structure.** Kelsey (1973: 62) indicates that workflow structure includes the activities which are directly concerned with the education of pupils. In the present context, this term refers to school-wide policies, rules, regulations, and established practices, that is, to policies, rules, regulations, and established practices which apply throughout the school (or to particular levels within the school) and which refer to equipping, sequencing, evaluation and reporting, pupil placement, pupil control, and the scope of the educational offering.

**Diversification of Workflow Structure.** The structuring of any aspect of the workflow in such a way as to increase the number of ways in which that aspect might be handled (Kelsey, 1973: 62) is taken to be an indication of a more diversified pattern of workflow activities.

**Pupil Control Ideology.** This term refers to the ideology of teachers and principals with regard to the control of pupil behavior. A high emphasis on the control of pupil behavior is regarded as reflecting a 'custodial' orientation. A 'humanistic' orientation is seen as one where the individual places less stress on controlling pupil behavior. The ideology may be measured by the PCI form and the mean score for each school is taken as the measure of
PCI in the present study.

Size of school. The number of pupils enrolled in the school as of September 30, 1976 is the measure of school size except in those instances where the analysis is dealing with relationships more appropriately using the number of teachers as the measure of size (e.g. with respect to the amount of duplicating equipment available for teacher use).

Type of School. Two types of school are present in the study—junior secondary schools enrolling grades eight, nine, and usually ten, and senior secondary schools enrolling grades twelve, eleven, and possibly ten. One of the reasons for using separate junior and senior schools was that one might reasonably expect different degrees of diversification of workflow structure in junior and senior schools—the different client group alone should be sufficient reason to expect differences in the way the schools are structured to carry out their work.

School District. The location of a particular school in one of the four school districts described earlier is considered a variable.

Measuring Instruments

As discussed earlier, two measuring instruments were used in the study. A discussion of each of these follows
under the appropriate headings.

Measurement of PCI. The Pupil Control Ideology instrument contains twenty items, each of which has five response categories. The score (range 20 to 100) reflects the Pupil Control Ideology of the respondent (low score, humanistic orientation; high score, custodial orientation). The twenty items each have a biserial correlation (obtained by dichotomizing scores about the mean) greater than .325, indicating that each item is a satisfactory discriminator. The split-half reliability coefficient based on a correlation of even-item subscores with odd-item subscores yielded a Pearson product-moment coefficient (corrected by Spearman-Brown formula) of .95 (Willower et al., 1967: 12). Further sampling and use of the same techniques yielded a corrected correlation of .91, indicating that the instrument was a reliable measure of educators' pupil control ideology (Willower et al., 1967: 12, 13). For purposes of validating the PCI form, the researchers asked principals to read descriptions of the custodial and humanistic viewpoints and to identify a specified number of teachers whose ideology was most like each description. A t-test comparing the mean PCI scores for the two groups identified was significant at the .01 level (t=2.639, df=48). A subsequent cross-validation was carried out using the same techniques with a new sample. The results supported the previous validation
Measurement of Diversification of Workflow. Measurement of diversification of workflow was by means of an instrument developed by Kelsey for his comparative study of schools in Alberta and the United Kingdom. This instrument has not been subjected to the extensive tests of reliability and validity which characterize the PCI form. For this reason, the use of this instrument was in a sense exploratory and required a more extensive set of analyses than did the use of the PCI form. These analyses are discussed in a later section.

In the original study (Kelsey, 1973), three stages were used in refining the original fifty-two item, multiple category instrument. Kelsey used Kendall's coefficient of concordance to assess the degree of association between items in different groups. When this was done, three sets of items had been identified—one set where the mean scores obtained by Alberta and West Riding schools were the same or very similar, a second set in which the mean score of West Riding schools was considerably greater than that of Alberta schools, and a third set which was the converse of the second set.

In Kelsey's study, the second (high Alberta means) and third (high West Riding means) sets showed significant (p<.05) association in the whole sample and their respective sub-samples and the three groups were used as the basis for
item analysis refinement using first the Brogden or General Biserial Coefficient (GBR) (Brogden, 1949), and then split-half reliability tests. The GBR analysis yielded two sets of eleven items which were accepted as the only sets of scalable discriminating items and subsequently subjected to split-half reliability tests (Kelsey, 1973: 166). Spearman's rank correlation coefficient was used to test the degree of association between ranks obtained by schools on each set of the items and the results showed significant associations at the .05 level (Kelsey, 1973: 166). It was from these results that the two eleven item sets were identified and subsequently labelled Acceptance and Personalization.

Control of Extraneous Variables

In order to control for the possible effects of geographic location and socio-cultural-economic environmental effects, the districts were selected from the same geographic location so that these effects could be considered as constant across the sample. The overall design for the study is presented in Figure 3.
The Problem and Sub-problems

Expressed generally, the problem was:

To identify and measure dimensions of school workflow structure and to examine the relationship between that structure and the size, type, and district affiliation of schools as well as the relationship between those dimensions and the pupil control ideology of school staffs.
Subsumed by this general problem statement are several sub-problems. These are provided below.

Sub-problem 1 To examine the workflow structures of a sample of junior and senior secondary schools using an instrument which was previously developed to measure the diversification of workflow in schools in a comparative study.

Sub-problem 1.1 To assess the applicability of the diversification of workflow instrument to the schools in the sample and to refine the instrument as necessary.

Sub-problem 1.2 To identify any underlying dimensions of school workflow structure revealed by the instrument and to compare these with previously identified dimensions.

Sub-problem 2 To examine the relationship between school workflow structure as measured above and certain variables of organizational context.

Sub-problem 2.1 To assess the extent to which school workflow structure differs according to local school district affiliation.
Sub-problem 2.2 To assess the extent to which the workflow structure differs according to school type (junior secondary compared to senior secondary).

Sub-problem 2.3 To assess the extent to which school workflow structure differs according to size of school.

Sub-problem 3 To examine the relationship between measures of school workflow structure and the pupil control ideology of school professional staffs.

Sub-problem 3.1 To assess the extent to which the pupil control ideology of school staffs differs from school district to school district.

Sub-problem 3.2 To assess the extent to which the pupil control ideology of school staffs varies according to type of school.

Sub-problem 3.3 To assess the extent to which the pupil control ideology of school staffs varies according to school size.

Sub-problem 3.4 To assess the extent of the association between the pupil control ideology of school staff and the measured workflow structure of the school.
Sub-problem 4 To revise the proposed model of determinants of school workflow structure in light of the results of the analyses performed in sub-problems one through three.

DATA COLLECTION AND ANALYSIS

The schools in the present study were selected according to the following criteria:

1. The parent district had to have separate junior and senior secondary schools.
2. At least two schools of each type had to be available in the district (in order to provide intra-type variance in some of the analyses).
3. The districts had to be in the same geographic area in order to minimize the effects of socio-economic-cultural variables as much as possible.
4. The schools had to be in a size range appropriate for comparison with Kelsey's sample.

Sample

A total of 22 junior secondary and 12 senior secondary schools were examined in four large school districts in the area previously described. This sample constitutes what has
been called the 'accessible population', that is, the population available to the researcher (Bracht and Glass, 1968:440). The group that the researcher wishes to understand better, and to which he wants to apply the conclusions drawn from his findings, is designated the 'target population' (Bracht and Glass, 1968:440). If, as in the present study, the sample has not been randomly selected, generalization to the target population can be made only on the basis of a thorough knowledge of the characteristics of the accessible population and the target population. The accessible population in the present study was briefly described on page 7. A fuller description of the characteristics of the four school districts is provided in Appendix C.

Since the school districts are located in the same geographic area, the possible effect of differing geographic locations on the same workflow processes was controlled. Only secondary schools were included since the only study which has attempted to examine workflow structure in schools did so using secondary schools, and the modification of the Diversification of Workflow form to discriminate between elementary and secondary schools would have involved the alteration of so many items that the original instrument, and Kelsey's study, would have been of little use as comparisons. The junior secondary schools ranged in size from approximately 350 to 1100 pupils and the senior
secondary schools ranged in size from approximately 550 to 2000 pupils. Kelsey's study had a size range from approximately 600 to 2500 pupils so the size ranges were roughly equivalent and should not lead to discrepancies in the findings on that basis alone.

Collection of Data

Data were obtained from two sources: from each principal (with respect to both Diversification of Workflow and PCI) and from each teacher (PCI). Principals were contacted at district administration meetings or by telephone. The Diversification of Workflow and the PCI forms were completed in individual schools. Principals distributed the PCI forms to staff for individual completion and return to the school office.

DATA ANALYSIS PROCEDURES

The analysis of data was carried out in four distinct stages. First, the data obtained from the Diversification of Workflow Form were analyzed to determine if any underlying dimensions could be identified. The second stage involved analysis of the relationship of workflow structure to the contextual variables of size of school, type of school, and school district. The third stage was concerned with analysis
of the Pupil Control Ideology. The final stage used
correlational analyses to examine the nature of the
relationship between PCI and any Diversification of Workflow
dimensions identified in stage 1.

Thirty-four schools (12 senior, 22 junior) had
participated in the study. Of the 1589 professional staff in
these schools, 943 provided usable returns. A
Diversification of Workflow Form was completed by each
principal. The rate of return of the Pupil Control Ideology
Form was 59.35%. The methods of analysis are discussed in
detail below. In view of the exploratory nature of the
research, the alpha level for statistical significance was
set at .10 for the analyses associated with the statistical
hypotheses corresponding to the sub-problems outlined
earlier in this chapter.

Diversification of Workflow

The Diversification of Workflow Form as used by Kelsey
contained fifty-two items (Kelsey, 1973: 292-308). In the
present study, only forty-eight items were employed. One
item (regarding program appellations) was not applicable to
the present British Columbia situation while data for three
others (concerning individual class sizes and times of day
of individual classes) proved to be unobtainable from
principals in many cases. Consequently, these items were
removed from consideration in the analysis.

The forty-eight items remaining were examined in the junior sample, the senior sample, and the combined sample in an attempt to either support Kelsey's two final dimensions (Personalization and Acceptance) or identify new ones. This part of the analysis was conducted in several stages. First, the degree of association among items in the various dimensions was assessed using Kendall's coefficient of concordance. Second, multiple t-tests were run to identify items which might discriminate between the junior and senior samples. Third, the items identified in stage two were tested for association (using Kendall's coefficient of concordance) in the whole sample, junior sample, and senior sample. Fourth, the items which had higher mean scores in the senior sample and which were identified as possible discriminators were tested in the three samples using Kendall's coefficient of concordance and a similar procedure was followed for items which had higher means in the junior sample. Fifth, the items identified by t-tests were subjected to cluster analysis, again for each of the three samples. Finally, both of Kelsey's final dimensions of Personalization and Acceptance were tested both individually and in combined fashion in each of the samples—again using the Kendall coefficient of concordance. A more detailed explanation of each procedure is provided below. The results are presented in Chapter 4.
The Association Among Items in the Diversification of Workflow Instrument

Kelsey examined the data from the Diversification of Workflow instrument and concluded, after considerable analysis, that only two dimensions existed—Personalization and Acceptance. The decision was made in the present study to begin with the initial items rather than with the two resultant dimensions. There were two reasons for this decision. First, Kelsey's study was a comparative one between English and Canadian schools. The results obtained were not necessarily those which would emerge in a study which examined only Canadian schools. Second, in the Canadian sample of the Kelsey study, six schools were public schools, and six were separate (Roman Catholic) public schools, and these were largely of the combined junior-senior type. This appeared to be an insufficient basis on which to accept Personalization and Acceptance as starting points in the current study.

Kendall's Coefficient of Concordance. The first stage, that of testing the association among items using the Kendall coefficient of concordance \( W \), was conducted in similar fashion to the Kelsey study. The use of a non-parametric test was considered appropriate in view of the relatively small junior (22 schools) and senior (12 schools) samples. Also, no assumptions needed to be made concerning the nature of the distributions which underlie the data.
Since the distributions are not known in this study, non-parametric analysis is more suitable than parametric techniques. In analyses involving all 34 schools, and in those analyses where it makes sense to view the data as quasi-interval (i.e. there is some sense of magnitude of differences between two scores [Glass and Stanley, 1970: 13]) it may be possible to use certain parametric tests (particularly the more 'robust' ones).

Kendall's coefficient of concordance (W) assesses the degree of agreement among judges' rankings. In the present analysis, schools were considered to be individuals ranked by the items (the judges). In each hypothesized element of the diversification of workflow, the items were used to rank schools in each of the junior sample, the senior sample, and the whole sample. For items considered under Equipping, it was necessary to combine various items differently a number of times since the calculation of the scores for certain items involved the same raw data.

An example showing the calculation of W is provided below. In it, five hypothetical schools (a, b, c, d, e) have been ranked (1, 2, 3, 4, or 5) according to their scores on each of three items. For simplicity of calculation, the example is assumed to have no tie scores.
\[ \text{SCHOOL} \]

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Item 1} & 1 & 4 & 3 & 2 \\hline
\text{Item 2} & 1 & 5 & 3 & 4 \\hline
\text{Item 3} & 5 & 3 & 2 & 1 \\hline
\text{Rj} & 7 & 12 & 8 & 7 \\hline
\end{array}
\]

Figure 4

Example of Rankings of Five Hypothetical Schools

The bottom row, Rj, indicates the sum of each school's assigned ranks. If the schools had been ranked in the same order on each item, then school a would have a rank sum of \(1+1+1=3\), with the sums for the remaining schools being 6, 9, 12, and 15. Such rankings would reflect perfect inter-item agreement.

When the rankings are such as to indicate no agreement on the part of the items, the rank sums are approximately equal. \(W\), the coefficient of concordance, is a function of the degree of variance among the rank sums. The higher the value of \(W\) \((0<W<1)\) the greater the rank variance and the greater the degree of agreement among the judges.
The computation of $W$ is obtained by:

$$W = \frac{\sum (R_j - \frac{\sum R_j}{N})^2}{\frac{1}{12} k^2 \frac{N^3 - N}{(N^3 - N)}}$$

Where $k$ is the number of judges, $N$ the number of ranks. In the example above,

$$W = \frac{(7-9)^2+(12-9)^2+(8-9)^2+(7-9)^2+(11-9)^2}{\frac{1}{12} (3)^2 (5^3 - 5)}$$

$W = .24$

The effect of ties is to depress the value of $W$. This effect may be countered by use of a tie correction factor. The formula for $W$ when ties are present is:

$$W = \frac{\sum (R_j - \frac{\sum R_j}{N})^2}{\frac{1}{12} k^2 (N^3 - N) - k \sum T}$$

Where $T=1/12 \Sigma (t^3 - t)$ and $t$ is the number of tied observations for a given rank within a particular group. $\Sigma$ indicates that all groups of ties in a given ranking are to be summed, and $\sum T$ indicates that the $T$ values are to be
Identification of Discriminating Items. The next part of the analysis sought to establish a foundation upon which the building of other groupings might be carried out. In order to do this, it was necessary to identify items which differentiated between the two different school types—junior and senior. Accordingly, multiple t-tests were run on items in an attempt to identify possible discriminating items. The alpha level for significance was set at .10. This level, plus the compounding effect of Type I error probability as a result of running multiple, separate t-tests meant that, although some items would be identified as significant discriminators when in fact they were not, the chance of a significant discriminator not being included was very low. The items identified would therefore serve as a basis for further refinement and analysis. Kendall's W was again used to test the degree of association of all discriminating items in each of the three samples (junior, senior, and all schools). Then, it was necessary to employ a procedure which would group similar items (i.e. items which correlate highly with one another) and give an indication of the strength of the multiple association. Cluster analysis was selected as the means by which these groupings would be identified.
**Cluster Analysis.** Cluster analysis groups similar variables using as an initial measure of association the distance between variables to group the two most similar variables. The next variable most similar to the first two is then included in the grouping. The process is repeated until each variable is included in one or more clusters. Each cluster includes at least two variables. The analysis may be visually represented by 'tree' or 'dendrogram' (Figure 5). Visual inspection of the cluster tree serves to identify large level changes where the number of variables in a cluster jumps abruptly. Large level changes are indicative of the points at which the clusters may be considered to be no longer well separated. Inspection of the cluster distances or similarities also provides an indication of how large a cluster should be by providing a measure of how close together the cluster items are. High similarity values reflect a more closely related or similar group of items than do low similarity values.
Figure 5

Example of Cluster Analysis Dendrogram
In Figure 5, item numbers are shown in parentheses on the left. The horizontal and slash lines delineate the boundaries of various clusters. The dendrogram is read by starting with the two variables (items) with the highest similarity indicator. In Figure 5, variables 28 and 29 have a similarity index of 99 (defined by the solid line triangle). These two variables form the first cluster. This cluster is then enlarged through the addition of variable 30, which has a similarity index of 98 with variable 29. The next cluster would consist of variables 28, 29, 30, and 14. Small clusters are then linked together to form new, larger clusters.

The similarity index for a given pair of variables is found by starting with the item that is lower on the page and reading upwards towards the top right hand corner until the number across from the second item is located. For example, the index relating item 37 and 23 is 48--the path is outlined by a solid line on each side. The index is circled. A similarity index of 50 indicates no association between two variables. A value of 65-75 is evidence of a moderate degree of positive association, values of 25 to 35 evidence of a moderate inverse association. Strong positive associations are indicated by indices greater than 75, strong inverse associations by indices less than 25. Composite indices, indicating the strength of association within an entire cluster, should always be greater than 50.
(i.e. always positive) since three or more variables cannot all be inversely related to one another. Values from 65 to 75 indicate a moderate degree of association for the whole cluster. Values above 75 are evidence of strong association.

In view of the exploratory nature of the present study, it was decided to accept as probable clusters groups with composite indices of 65 or above. These groups were then examined for logical coherence and tested for association using Kendall's W.

**Tests of Kelsey's Dimensions.** In order to assess the applicability of the two dimensions identified by Kelsey, the items constituting his dimensions of Acceptance and Personalization were subjected to tests of association (Kendall's W) in the three samples. The two eleven item groups were tested separately, then as a composite group of twenty-two items.

**Tests of Variables of Organizational Context**

In order to test for possible inter-district differences in school size, an analysis of variance/multiple range test analysis was carried out. Next, district differences on the item group identified earlier were tested, again using analysis of variance and multiple range tests. Finally, the possible effects of size on workflow structure were examined using the item groups identified in
the earlier stages of the analysis and correlating them with school size. The correlation coefficient used in this part of the analysis was Kendall's Tau (τ). For \( n > 10 \), normal approximation may be used to calculate the probability of Tau. A two-tailed test was conducted at alpha=.10.

**Pupil Control Ideology Form**

A total of 943 usable Pupil Control Ideology forms were returned by school professional staff. This total represented a response rate of 59.35% (943/1589). The lowest rate of return from a school was 39.39%, the highest 100%. A PCI score, representing the mean of the PCI responses, was calculated for each school. The standard deviation and the variance were also calculated.

The mean PCI scores were grouped according to district and an analysis of variance was conducted in each sample to determine whether or not any significant differences existed among districts with respect to this variable. If not, then it could be concluded that no district differences existed and the schools could be viewed as belonging to only the whole sample and either the junior or senior sample. Where the ANOVA results indicated the possibility of significant differences among the districts on the PCI variable, multiple range tests were conducted since the F values gave no indication of which contrasts might be contributing to
the significant ANOVA findings. The Scheffe multiple range test was used in this part of the analysis. These procedures were followed by a t-test analysis to examine the difference in PCI scores between junior and senior schools.

The second part of the PCI analysis involved assessing the extent of the relationship between school size and school PCI score. Kendall's rank correlation coefficient Tau was used in this analysis.

The third part of the analysis examined the relationship between school PCI and school diversification of workflow structure using the mean PCI score for each school and each school's score of the dimensions of workflow structure identified earlier in the analysis. Kendall's Tau was again used in this part of the analysis, using a two-tailed test at p=.10.

SUMMARY

This chapter has detailed the problem and associated sub-problems of the study and has outlined the variables, the data collection, and the analytical procedures. The next chapter presents the results of the analysis and a discussion of the results sub-problem by sub-problem follows in Chapter 5.
Chapter 4
FINDINGS OF THE STUDY

This chapter presents the findings of the analyses outlined in the previous chapter. The findings are provided under three main chapter divisions—the measurement of workflow structure, variables of organizational context and workflow structure, and workflow structure and pupil control ideology. A summary section concludes the chapter.

THE MEASUREMENT OF WORKFLOW STRUCTURE (Sub-problem 1)

The analysis dealing with the measurement of workflow structure was conducted in the order suggested by the statement of sub-problems. The workflow structures of the schools were examined using Kelsey's Diversification of Workflow instrument and the instrument was refined in the attempt to identify underlying dimensions. The results of the analyses are presented under two headings—Refinement of the Instrument, and Dimensions of Workflow Structure.

Refinement of the Instrument (Sub-problem 1.1)

The first stage in this section of the analysis was an assessment of the degree to which the forty-eight items of
the Diversification of Workflow form associated as they had been initially conceptualized by Kelsey (1973:57). Consequently, the six groups of items corresponding to equipping, sequencing, pupil placement, control, scope, and evaluation and reporting were each tested for association using Kendall's W.

The results of the analysis are presented in Table 1. The items grouped for testing are shown on the left of the table. The values of W are provided for each of the three samples, along with an indication of those groupings which had a value of W with a probability sufficiently high to indicate that they may be considered homogeneous groups. A probability level less than or equal to .10 was taken as evidence of homogeneity. As noted previously, this probability level was selected because of the exploratory nature of the study.
### Table 1
The Diversification of Workflow Instrument: Results of Kendall's Coefficient of Concordance (W) Applied to Items Grouped in Six Hypothesized Dimensions

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>WHOLE SAMPLE VALUE OF W (n=34)</th>
<th>SENIOR SAMPLE VALUE OF W (n=12)</th>
<th>JUNIOR SAMPLE VALUE OF W (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQUIPPING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,3,10</td>
<td>.23662</td>
<td>.25568</td>
<td>.23341</td>
</tr>
<tr>
<td>1,2,4,10</td>
<td>.27511</td>
<td>.33588</td>
<td>.25335</td>
</tr>
<tr>
<td>1,2,5,10</td>
<td>.24364</td>
<td>.29292</td>
<td>.24735</td>
</tr>
<tr>
<td>1,2,6,10</td>
<td>.26680</td>
<td>.30048</td>
<td>.25540</td>
</tr>
<tr>
<td>1,2,7,10</td>
<td>.23909</td>
<td>.28038</td>
<td>.24149</td>
</tr>
<tr>
<td>1,2,8,10</td>
<td>.23930</td>
<td>.27950</td>
<td>.22685</td>
</tr>
<tr>
<td>1,2,9,10</td>
<td>.21316</td>
<td>.22968</td>
<td>.20250</td>
</tr>
<tr>
<td>1,2,3,11</td>
<td>.23907</td>
<td>.31053</td>
<td>.22946</td>
</tr>
<tr>
<td>1,2,4,11</td>
<td>.24979</td>
<td>.35337</td>
<td>.22660</td>
</tr>
<tr>
<td>1,2,5,11</td>
<td>.29326</td>
<td>.39161</td>
<td>.28240</td>
</tr>
<tr>
<td>1,2,6,11</td>
<td>.25744</td>
<td>.33829</td>
<td>.24986</td>
</tr>
<tr>
<td>1,2,7,11</td>
<td>.21387</td>
<td>.31731</td>
<td>.19540</td>
</tr>
<tr>
<td>1,2,8,11</td>
<td>.24454</td>
<td>.31971</td>
<td>.23825</td>
</tr>
<tr>
<td>1,2,9,11</td>
<td>.25891</td>
<td>.29458</td>
<td>.26990</td>
</tr>
<tr>
<td>PLACEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Items 12,13)</td>
<td>.06770</td>
<td>.28070</td>
<td>.20040</td>
</tr>
<tr>
<td>SEQUENCING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Items 14-22)</td>
<td>.14107</td>
<td>.13238</td>
<td>.12603</td>
</tr>
<tr>
<td>CONTROL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Items 23-32)</td>
<td>.26228*</td>
<td>.26881*</td>
<td>.10362</td>
</tr>
<tr>
<td>SCOPE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Items 33-40)</td>
<td>.08475</td>
<td>.09654</td>
<td>.08090</td>
</tr>
<tr>
<td>EVALUATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AND REPORTING</td>
<td>.16171</td>
<td>.14461</td>
<td>.16325</td>
</tr>
</tbody>
</table>

*Significant at .10
(a) The content of each item is shown in Appendix A.
(b) Since there were only two items in this category, Kendall's rank correlation coefficient (\( \tau \)) was used.
This analysis demonstrated that the items were not associated as they had been initially conceptualized. Only Control items associated significantly, and then only in the senior sample and the whole sample.

The second stage of analysis was an attempt to identify items which differentiated between the junior and senior schools. Multiple t-tests were run on the differences between the mean of the junior schools score on an item and the mean of the senior school scores on that item.

The t-test analysis yielded nineteen items which appeared to discriminate between the junior and senior schools. Five items from the original element of Equipping, one from Placement, four from Sequencing, six from Control, one from Scope, and two from Evaluation and Reporting were identified. These are shown in Table 2, which also shows their t values and probability levels.
Table 2
Diversification of Workflow Items Identified as Possible Junior-Senior Discriminators Using Multiple t-tests

<table>
<thead>
<tr>
<th>ITEM (a)</th>
<th>t-VALUE (b)</th>
<th>PROBABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-2.343</td>
<td>.032</td>
</tr>
<tr>
<td>4</td>
<td>-2.473</td>
<td>.018</td>
</tr>
<tr>
<td>6</td>
<td>-2.774</td>
<td>.009</td>
</tr>
<tr>
<td>8</td>
<td>-1.944</td>
<td>.073</td>
</tr>
<tr>
<td>10</td>
<td>-2.496</td>
<td>.024</td>
</tr>
<tr>
<td>12</td>
<td>2.783</td>
<td>.009</td>
</tr>
<tr>
<td>14</td>
<td>-4.086</td>
<td>.002</td>
</tr>
<tr>
<td>19</td>
<td>-1.700</td>
<td>.095</td>
</tr>
<tr>
<td>21</td>
<td>-2.442</td>
<td>.019</td>
</tr>
<tr>
<td>22</td>
<td>-2.110</td>
<td>.041</td>
</tr>
<tr>
<td>23</td>
<td>-3.002</td>
<td>.005</td>
</tr>
<tr>
<td>24</td>
<td>-3.629</td>
<td>.001</td>
</tr>
<tr>
<td>27</td>
<td>-4.062</td>
<td>.002</td>
</tr>
<tr>
<td>28</td>
<td>-4.939</td>
<td>.001</td>
</tr>
<tr>
<td>29</td>
<td>-5.213</td>
<td>.001</td>
</tr>
<tr>
<td>30</td>
<td>-4.478</td>
<td>.001</td>
</tr>
<tr>
<td>37</td>
<td>2.124</td>
<td>.040</td>
</tr>
<tr>
<td>44</td>
<td>1.856</td>
<td>.069</td>
</tr>
<tr>
<td>47</td>
<td>2.147</td>
<td>.038</td>
</tr>
</tbody>
</table>

(a) Only items with \( p < .10 \) are included in the table
(b) Negative values indicate that the mean score was higher in senior schools than in junior schools
The nineteen items that were identified by t-test were tested for association in each of the three samples using Kendall's W. The results are shown in Table 3.

Table 3

Kendall's Coefficient of Concordance (W) for Nineteen Possible Discriminating Items Identified by t-test

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>ALL 19</td>
<td>.16360*</td>
<td>.19970*</td>
<td>.04038</td>
</tr>
</tbody>
</table>

*(Table 2)*

*Significant at .10

The nineteen items were significantly associated in the whole sample and the senior sample. A possible explanation of the failure of the group of items to associate significantly in the junior sample was that some of the nineteen items may have been included as a result of the
multiple t-test procedure when they should not have been. Consequently, a further step was required to determine which items not only discriminated between schools but also associated with each other. For this step, cluster analysis was used.

The results of the cluster analysis used in this stage of the analysis are shown in Figure 6. Item numbers are shown in the left column.

Inspection of the cluster analysis 'tree' and reference to the distance or similarity measures indicated the presence of three well-defined clusters, outlined by solid lines in Figure 6. A discussion of each of these follows.
Figure 6

Results of Cluster Analysis
The first cluster, and the one around which the tree was formed, comprised ten items (14, 19, 21, 22, 23, 24, 27, 28, 29, 30) with a cluster similarity of 66.83 (i.e. moderate association). There was, however, a strong possibility that the seven item cluster (14, 23, 24, 27, 28, 29, 30), nested within the main cluster should be the cluster considered as most clearly defined. The omission of items 19, 21, 22 raised the similarity of the cluster to 72.41. The exclusion of the last item added to this subcluster (item 23) increased cluster similarity to 81.86—a much more clearly defined, coherent cluster than the one first identified. The most well defined cluster, then, consisted of items 14, 24, 27, 28, 29, and 30. At this point of the analysis, however, the other items (19, 21, 22, 23) were not rejected completely but were held in abeyance pending further analysis. Since the most well-defined cluster consisted largely of items originally considered to be Control items, the cluster was labelled 'Diversification of Control' for future reference.

The second cluster identified was a well defined, close (similarity = 86.81) five item cluster comprised of items 3, 4, 6, 8, and 10. These items were all from the initially hypothesized dimension of Equipping. Unfortunately, their clustering without the inclusion of any other items was perhaps only reflective of the possibility that the score on items 3, 4, 6 and 8 might be associated with school size
(i.e. the larger the school, the more diversified the equipment). Also, some inter-dependence was evident among the five items as a result of the methods of calculation (see Appendix A for details of calculations). Given these considerations, it was possible that this cluster might have little to contribute to the identification of dimensions underlying the workflow processes, however, it was entitled 'Diversification of Equipment' and retained for further analysis.

The third cluster included items 12, 37, 44, and 47. Examination of the similarity figures showed a cluster similarity of only 47.58 and inspection of the similarity indices for the item pairs showed weak (40-64) associations. The low indices for this cluster led to its rejection as a possible dimension.

At this point, the first two clusters remained as serious contenders for identification as dimensions underlying school workflow processes. The question remained as to whether the first cluster should include seven, eight, or ten items. Further, did the items in this cluster make sense conceptually in terms of school operation?

Inspection of the items identified as Diversification of Control revealed that six of these items (23, 24, 27, 28, 29, 30) were from the originally hypothesized dimension of Control. The remaining four (items 14, 19, 21, 22) were from the original dimension of Sequencing. An
inspection of these four items showed, however, that they too could be viewed as having strong control aspects. Item 14, for example, deals with the time at which a student is required to come to school in the morning. In terms of controlling student movement, this sequence item could easily be accepted as being linked with a control dimension.

Similarly, item 22 concerns the frequency with which students drop courses and could also be construed as possessing control aspects. Dropping a course without substituting another implies the associated problem of what the student does with this now unoccupied time. A desire to exert close control over students could manifest itself in an unwillingness to allow students to drop courses and be reflected in a low frequency of course drop. Item 21 deals with the frequency of course change by students. It too could be viewed as an aspect of control, as could item 19 dealing with time of year when a student may drop a course.

Dimensions of Workflow Structure (Sub-problem 1.2)

To this point, two possible dimensions could be seen to underlie the workflow structure in schools. Kelsey had also identified two dimensions, but the items constituting his dimensions were quite different from those in the present study (see Table 4). This discrepancy warranted further examination.
Table 4

Kelsey's Two Dimensions of Diversification of Workflow Structure

<table>
<thead>
<tr>
<th>Item*</th>
<th>Personalization</th>
<th>Item</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>How frequently does it happen that a student has to revise his selection of courses because what he originally wanted is not possible on the timetable?</td>
<td>14</td>
<td>What is the policy governing the time at which students arrive each day?</td>
</tr>
<tr>
<td>23</td>
<td>How is student attendance recorded?</td>
<td>20</td>
<td>How often do cases of program change on the part of students occur?</td>
</tr>
<tr>
<td>25</td>
<td>How is excessive or inexcusable absence dealt with for students above the statutory leaving age?</td>
<td>21</td>
<td>How often do cases of course change on the part of students occur?</td>
</tr>
<tr>
<td>27</td>
<td>What is the policy regarding spare periods for students?</td>
<td>24</td>
<td>What are the policies regarding the explanation of students absence for students above the statutory leaving age?</td>
</tr>
<tr>
<td>38</td>
<td>Is there a home room teacher (or equivalent) for each student? If so, what is the function of this person?</td>
<td>28</td>
<td>Is the attendance of students at spare periods recorded?</td>
</tr>
<tr>
<td>40</td>
<td>Is it school policy to attempt to give at least one spare period to every student above the statutory leaving age?</td>
<td>29</td>
<td>Are spare periods supervised?</td>
</tr>
<tr>
<td>43</td>
<td>In what form are final marks rendered?</td>
<td>30</td>
<td>Where may students go during spare periods?</td>
</tr>
<tr>
<td>44</td>
<td>What is the policy regarding advancement of students to the next senior level?</td>
<td>31</td>
<td>Is there a centrally operated detention system?</td>
</tr>
<tr>
<td>45</td>
<td>What format is used for reports to parents?</td>
<td>32</td>
<td>How is homework assigned for students above the statutory leaving age?</td>
</tr>
<tr>
<td>46</td>
<td>What does the report card show?</td>
<td>33</td>
<td>Are any subjects required for students above the statutory leaving age other than what are specified by governmental bodies?</td>
</tr>
<tr>
<td>47</td>
<td>What may be included in reports to parents?</td>
<td>35</td>
<td>Are students represented on school policy making bodies?</td>
</tr>
</tbody>
</table>

* Item numbers refer to items in the form in Appendix A
Kelsey's dimensions had eleven items each. Each possessed a number of items which could be construed as being concerned with the control of students. For example, Personalization incorporates items concerning recording student absence (item 23), procedures for dealing with absence (item 25), policy regarding spare periods (items 27, 40) and the format and scope of the report card (items 45, 46, 47). Each of these can easily be viewed as a control item. Similarly, Acceptance possesses eleven items—all of which might be seen as control items. These concern attendance; frequencies of program change, program drop, course change and course drop; spare period supervision; homework assignment; detention; student representation on policy committees; and compulsory subjects.

The fact that Kelsey was able to identify two control-related dimensions, rather than a single one of diversification of control, may have been due to the different geographic locations and types of school systems used. If this was in fact the case, the identification of a single control-related dimension, diversification of control, in a single geographic area with only public schools, is not unwarranted. Of the eleven items from Acceptance, six were identified in the Diversification of Control Factor in the present study. Only two items from Personalization were included. The failure of the remaining Personalization items to be identified may be a result of...
cultural consistency in the present study--most of these items dealt with the nature of the report card, the advancement of pupils, and course choice revisions as a result of timetabling problems.

In short, the cluster identified as Diversification of Control in the present study consisted of six items found in Kelsey's dimension of Acceptance, two found in Personalization, and two not found in either. As a check to see how the present data acted in Kelsey's dimensions, the items from each were tested for association (using Kendall's W) in the junior sample, the senior sample, and the whole sample. Also, the dimensions were checked as a combined group of twenty-two items, again in each of the three samples. The results are shown in Table 5.
Table 5
Kelsey's Dimensions of Acceptance and Personalization Tested for Association Using Kendall's Coefficient of Concordance (W)

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>WHOLE SAMPLE W</th>
<th>SENIOR SAMPLE W</th>
<th>JUNIOR SAMPLE W</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCEPTANCE</td>
<td>.21172*</td>
<td>.20017*</td>
<td>.08948</td>
</tr>
<tr>
<td>PERSONALIZATION</td>
<td>.08962</td>
<td>.13128</td>
<td>.07399</td>
</tr>
<tr>
<td>ALL 22 ITEMS</td>
<td>.10096*</td>
<td>.14078*</td>
<td>.04969</td>
</tr>
</tbody>
</table>

*significant at .10

Personalization, as a dimension in the present study, may be rejected. In no sample were significant results obtained. Acceptance items, on the other hand, associated significantly in both the whole sample and the senior sample. The two dimensions combined yielded significant results in both the whole and senior samples. These significant results are almost certainly a factor of the strength of the association of items in the Acceptance dimension.

Since it had not yet been firmly established whether the present dimension of Diversification of Control should consist of ten, eight, or seven items, association tests were performed on each possible grouping. The intent was to
retain the maximum number of items which associated significantly in each of the three samples. The results are displayed in Table 6.

Table 6
Diversification of Control Items Tested for Association Using Kendall's Coefficient of Concordance (\(W\))

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>JUNIOR SAMPLE</th>
<th>SENIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ITEMS</td>
<td>.41377*</td>
<td>.19049*</td>
<td>.49101*</td>
</tr>
<tr>
<td>8 ITEMS</td>
<td>.48273*</td>
<td>.20276*</td>
<td>.62396*</td>
</tr>
<tr>
<td>7 ITEMS</td>
<td>.52340*</td>
<td>.21596*</td>
<td>.65306*</td>
</tr>
</tbody>
</table>

*Significant at .10

Significant results were evident for all three groupings in all three samples. Since the ten-item group associated significantly in all three samples, the cluster could be viewed as containing ten items which discriminated between junior and senior schools (as demonstrated by t-test) and which also constituted a homogeneous set. The groups of seven and eight items were therefore excluded from
further consideration.

Compared with the results of the analyses of Kelsey's dimension of Acceptance, there was no doubt that the ten items were a more cohesive group (as evidenced by substantially higher values of $W$) than were the Acceptance items. Accordingly, Acceptance as a dimension in the present study was rejected in favor of the ten item group labelled Diversification of Control. The items are displayed in Table 7. The next step was to test the five items identified as Diversification of Equipment for association in each of the samples. The results are shown in Table 8.
Table 7
The Ten Homogeneous, Discriminating Items Constituting Diversification of Control

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>What is the policy governing the time at which students arrive each day?</td>
</tr>
<tr>
<td>17.</td>
<td>When may a student drop a course without substituting another?</td>
</tr>
<tr>
<td>18.</td>
<td>How often do cases of course change on the part of students occur?</td>
</tr>
<tr>
<td>20.</td>
<td>How often are there cases of students' dropping a course?</td>
</tr>
<tr>
<td>21.</td>
<td>How is student attendance recorded?</td>
</tr>
<tr>
<td>22.</td>
<td>What is the policy regarding student absence for students above the statutory leaving age?</td>
</tr>
<tr>
<td>25.</td>
<td>What is the policy regarding spare periods for students?</td>
</tr>
<tr>
<td>26.</td>
<td>Is attendance of students at spare periods recorded?</td>
</tr>
<tr>
<td>27.</td>
<td>Are spare periods supervised?</td>
</tr>
<tr>
<td>28.</td>
<td>Where do students go during spare periods?</td>
</tr>
</tbody>
</table>
Table 8  
Diversification of Equipment Items Tested for Association Using Kendall’s Coefficient of Concordance (W)

<table>
<thead>
<tr>
<th></th>
<th>Whole Sample</th>
<th>Junior Sample</th>
<th>Senior Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.68726*</td>
<td>.62769*</td>
<td>.68951*</td>
</tr>
</tbody>
</table>

*Significant at .10

The five items constituting Diversification of Equipment associated significantly in all three samples and could therefore be viewed as a homogeneous set. The items are listed in Table 9.
Table 9
The Five Homogeneous, Discriminating Items Constituting Diversification of Equipment

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Number of pieces of audiovisual equipment multiplied by the number of functions (a)</td>
</tr>
<tr>
<td>4. Number of pieces of audiovisual equipment divided by the number of kinds of equipment (b)</td>
</tr>
<tr>
<td>6. Number of pieces of SOUND equipment multiplied by the number of functions</td>
</tr>
<tr>
<td>8. Number of pieces of SOUND AND VISION equipment multiplied by the number of functions</td>
</tr>
<tr>
<td>10. Number of pieces of duplicating equipment</td>
</tr>
</tbody>
</table>

(a) See Appendix A for details of functions
(b) See Appendix A for details of kinds of equipment
A Diversification of Control dimension score for each school was obtained by adding up a school's score on the individual items—a permissible procedure since the items associated so highly and were able to be considered a homogeneous set. The scores are shown in Table 10. Schools are listed by district affiliation (A, B, C, or D) and are also identified under each district by number in the left column. The score for each school is found in the right column under each district. Scores in junior secondary schools range from 12 to 26, scores in senior secondary schools from 14 to 40. Overall mean score was 21.3 (senior mean 29.6, junior mean 16.7).
Table 10
School Scores on Diversification of Control
Grouped by School District

<table>
<thead>
<tr>
<th>District A*</th>
<th>District B</th>
<th>District C</th>
<th>District D</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Score</td>
<td>School Score</td>
<td>School Score</td>
<td>School Score</td>
</tr>
<tr>
<td>1</td>
<td>29</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The first three schools in each district are the senior secondary schools.

In view of the large magnitude differences in scores on the items constituting Diversification of Equipment, a composite score was calculated for each school by standardizing the individual item scores and summing the standardized scores. Since this operation yielded some negative scores, 100 was added to each school's final score.
so that all schools would receive positive scores for easier comparison. The scores are displayed in Table 11. The senior mean score was 128.7, the junior mean score 77.7 (overall mean 103.0).

Table 11

School Scores on Diversification of Equipment
Grouped by School District

<table>
<thead>
<tr>
<th>District A (a)</th>
<th>District B</th>
<th>District C</th>
<th>District D</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Score</td>
<td>School Score</td>
<td>School Score</td>
<td>School Score</td>
</tr>
<tr>
<td>1 109.9</td>
<td>10 125.2</td>
<td>18 274.1</td>
<td>26 73.3</td>
</tr>
<tr>
<td>2 119.3</td>
<td>11 168.2</td>
<td>19 169.3</td>
<td>27 88.3</td>
</tr>
<tr>
<td>3 98.0</td>
<td>12 112.9</td>
<td>20 124.7</td>
<td>28 80.4</td>
</tr>
<tr>
<td>4 90.6</td>
<td>13 92.7</td>
<td>21 (b)</td>
<td>29 51.8</td>
</tr>
<tr>
<td>5 107.5</td>
<td>14 108.2</td>
<td>22 68.5</td>
<td>30 53.5</td>
</tr>
<tr>
<td>6 103.1</td>
<td>15 93.2</td>
<td>23 110.7</td>
<td>31 51.4</td>
</tr>
<tr>
<td>7 127.9</td>
<td>16 112.1</td>
<td>24 85.2</td>
<td>32 85.8</td>
</tr>
<tr>
<td>8 116.3</td>
<td>17 107.9</td>
<td>25 92.5</td>
<td>33 53.0</td>
</tr>
<tr>
<td>9 82.5</td>
<td></td>
<td></td>
<td>34 61.1</td>
</tr>
</tbody>
</table>

(a) The first three schools in each district are the senior secondary schools.
(b) No equipment data were made available for this school
Next, the Diversification of Control scores and Diversification of Equipment scores were tested for association using Kendall's Tau. The results are found in Table 12. No significant results were obtained.

Table 12

Correlation of Diversification of Control Scores With Diversification of Equipment Scores Using Kendall's Tau

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation of Diversification of Control Scores With Diversification of Equipment Scores Using Kendall's Tau</td>
<td>.0137</td>
<td>-.1206</td>
<td>-.1760</td>
</tr>
</tbody>
</table>
This section presents the results of the analyses carried out to investigate the extent of the relationships among the newly-identified dimensions of workflow structure and the three variables of organizational context of interest (school district, school type, and school size). The results are reported under the appropriate headings.

School District (Sub-problem 2.1)

In order to examine the possibility of inter-district differences on the Diversification of Control dimension, an analysis of variance was carried out. The results of this analysis are displayed in Table 13. Significant F ratios (p<.10) were found in the whole sample and the senior sample indicating that some pairs of districts might be significantly different.
Table 13
Analysis of Variance Results For School Diversification of Control Scores By District

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean Squares</th>
<th>F Ratio (d.f.)</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>150.26</td>
<td>2.339 (3,30)</td>
<td>.0934*</td>
</tr>
<tr>
<td></td>
<td>64.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>239.42</td>
<td>11.093 (3,8)</td>
<td>.0032*</td>
</tr>
<tr>
<td></td>
<td>21.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>19.11</td>
<td>2.025 (3,18)</td>
<td>.1465</td>
</tr>
<tr>
<td></td>
<td>9.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10

Since significant inter-district differences were found for both the whole and senior samples, multiple range tests were run on the six possible contrasts on pairs of districts (AB, AC, AD, BC, BD, CD) in each sample using the Scheffe procedure. The results are shown in Table 14. The differences in means ranged from 1.069 to 8.33 in the whole sample and from 1.67 to 18.00 in the senior sample. No significant differences were found in the whole sample. Significant inter-district differences among senior schools were evident between districts A and C, A and D, B and C, and B and D. That is, districts A and B were found to be significantly different from districts C and D.
Table 14

Results of Multiple Range Tests on School Scores on Diversification of Control by District Using the Scheffe Method of Multiple Contrasts

<table>
<thead>
<tr>
<th>Districts</th>
<th>Difference Between Means</th>
<th>Difference Required For Significance (.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Whole Sample</td>
<td>Senior Sample</td>
</tr>
<tr>
<td>A, B</td>
<td>1.39</td>
<td>4.00</td>
</tr>
<tr>
<td>A, C</td>
<td>7.26</td>
<td>16.33*</td>
</tr>
<tr>
<td>A, D</td>
<td>8.33</td>
<td>18.00*</td>
</tr>
<tr>
<td>B, C</td>
<td>5.875</td>
<td>12.33*</td>
</tr>
<tr>
<td>B, D</td>
<td>6.94</td>
<td>14.00*</td>
</tr>
<tr>
<td>C, D</td>
<td>1.069</td>
<td>1.67</td>
</tr>
</tbody>
</table>

*Significant at .10

An analysis of variance was next performed to test for possible inter-district differences on Diversification of Equipment. The results are shown in Table 15. Significant F values were noted in all three samples, again indicating the possibility of significant differences for pairs of districts. Consequently, multiple range tests were conducted on pairs of districts using the Scheffe method of comparison. The multiple range test results are displayed in Table 16. Significant differences among districts were
evident in all three samples. In the whole sample, districts B and D, and C and D differed significantly; in the senior sample districts C and D differed significantly; and districts A and D, B and D, and C and D differed significantly in the junior sample.

Table 15
Analysis of Variance Results For School Diversification of Equipment Scores By District

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean Squares</th>
<th>F Ratio (d.f.)</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>6380.23</td>
<td>4.944 (3, 29)</td>
<td>.0068*</td>
</tr>
<tr>
<td></td>
<td>1290.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>6418.42</td>
<td>3.723 (3, 8)</td>
<td>.0608*</td>
</tr>
<tr>
<td></td>
<td>1723.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>2544.08</td>
<td>12.294 (3, 17)</td>
<td>.0002*</td>
</tr>
<tr>
<td></td>
<td>206.93</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10
Table 16

Results Of Multiple Range Tests On School Scores On Diversification Of Equipment By District Using the Scheffe Method Of Multiple Contrasts

<table>
<thead>
<tr>
<th>Districts</th>
<th>Difference Between Means</th>
<th>Difference Required For Significance (.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Whole Sample</td>
<td>Senior Sample</td>
</tr>
<tr>
<td>A, B</td>
<td>8.93</td>
<td>26.37</td>
</tr>
<tr>
<td>A, C</td>
<td>26.02</td>
<td>80.30</td>
</tr>
<tr>
<td>A, D</td>
<td>39.56</td>
<td>28.40</td>
</tr>
<tr>
<td>B, C</td>
<td>17.09</td>
<td>53.93</td>
</tr>
<tr>
<td>B, D</td>
<td>48.48*</td>
<td>54.77</td>
</tr>
<tr>
<td>C, D</td>
<td>65.58*</td>
<td>108.70*</td>
</tr>
</tbody>
</table>

*Significant at .10

Type of School (Sub-problem 2.2)

Since the items had been selected on the basis of their individual ability to discriminate between junior secondary schools and senior secondary schools, the items as groups should also have been capable of inter-type discrimination. The test used to ascertain the correctness of this supposition was a t-test of the difference between the means for each of the two school types. The Diversification of Control results appear in Table 17. Table 18 contains the results of the t-test conducted with respect to the
Diversification of Equipment scores. The difference between the means was found to be significant in both instances.

Table 17

<table>
<thead>
<tr>
<th>t-value</th>
<th>degrees of freedom</th>
<th>t probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.09</td>
<td>32</td>
<td>&lt;.10</td>
</tr>
</tbody>
</table>

Table 18

<table>
<thead>
<tr>
<th>t-value</th>
<th>degrees of freedom</th>
<th>t probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.86</td>
<td>31</td>
<td>&lt;.10</td>
</tr>
</tbody>
</table>
Size of School (Sub-problem 2.3).

Size of school was tested for possible district differences in each of the three samples. No significant differences were obtained. It could therefore be concluded that no district differences existed with respect to size. The results are reported in Table 19. A t-test was employed to test the difference between junior and senior school sizes. The results of this test are found in Table 20. The difference between size of junior secondary school (mean size 763) and size of senior secondary school (mean size 1114) was found to be significant.

Table 19

Analysis of Variance Results For School Size By District

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean Squares</th>
<th>F Ratio (d.f.)</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>16829.72</td>
<td>.180 (3,29)</td>
<td>.9091</td>
</tr>
<tr>
<td></td>
<td>93464.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>60695.27</td>
<td>.461 (3,8)</td>
<td>.7169</td>
</tr>
<tr>
<td></td>
<td>131539.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>22770.10</td>
<td>.691 (3,17)</td>
<td>.5693</td>
</tr>
<tr>
<td></td>
<td>32947.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10
Table 20  
*t-Test Comparing Junior and Senior Mean School Sizes*

<table>
<thead>
<tr>
<th>t-value</th>
<th>degrees of freedom</th>
<th>t probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.022</td>
<td>32</td>
<td>&lt;.10</td>
</tr>
</tbody>
</table>
The individual school scores on Diversification of Control were next correlated with the size of the school (number of students) using Kendall's Tau. The results are displayed in Table 21. No significant association was found. Diversification of Equipment scores were also correlated with size of school, again using Tau. The results are shown in Table 22. A significant result was obtained in the whole sample. The separate analyses conducted on the junior and senior samples yielded no significant associations.

Table 21

Correlation of School Scores on Diversification of Control and Size of School (Number of Students) Using Kendall's Tau

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.1656</td>
<td>0</td>
<td>-.1479</td>
</tr>
</tbody>
</table>
Table 22
Correlation of School Scores on Diversification of Equipment and Size of School (Number of Students) Using Kendall's Tau

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.2253*</td>
<td>.0658</td>
<td>.1576</td>
</tr>
</tbody>
</table>

*Significant at .10

WORKFLOW STRUCTURE AND PUPIL CONTROL IDEOLOGY (Sub-problem 3)

This section deals with the findings of the analyses of the data from the Pupil Control Ideology form. The extent of the relationship of PCI to variables of organizational context (school district, school size, and school type) is explored, and the results of the correlational analysis between Pupil Control Ideology and Dimensions of Workflow Structure are outlined.
**PCI Scores**

Measures of central tendency (the mean) and variance were calculated for each school for the pupil control ideology (PCI) scores. These measures are displayed by school in Table 23. Each school is identified by the same number used in the section on the results of the analysis of workflow structure (Tables 10 and 11). The percentage response rate of each school on the PCI form is provided, the mean PCI score for each school is shown, and the standard deviation and variance in each school with respect to the teacher PCI scores are also included. School response rates range from 39.39% to 100.0% (mean response rate by school is 60.86%). The overall range of mean PCI scores is 44.33 to 60.56 (44.33-55.00 in senior schools, 50.37-60.56 in junior schools). Standard deviations range from 6.77 to 9.44 in the senior schools, and from 5.91 to 15.79 in the junior schools. The whole sample range of standard deviations was therefore 5.91 to 15.79.
Table 23
Pupil Control Ideology Data by School

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>RESPONSE RATE (PERCENTAGE)</th>
<th>MEAN PCI SCORE</th>
<th>STANDARD DEVIATION</th>
<th>VARIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48.48</td>
<td>54.09</td>
<td>8.81</td>
<td>77.64</td>
</tr>
<tr>
<td>2</td>
<td>53.85</td>
<td>50.33</td>
<td>8.72</td>
<td>76.11</td>
</tr>
<tr>
<td>3</td>
<td>61.90</td>
<td>53.67</td>
<td>9.11</td>
<td>82.95</td>
</tr>
<tr>
<td>4</td>
<td>62.86</td>
<td>52.45</td>
<td>7.15</td>
<td>51.12</td>
</tr>
<tr>
<td>5</td>
<td>77.78</td>
<td>52.31</td>
<td>8.68</td>
<td>75.65</td>
</tr>
<tr>
<td>6</td>
<td>51.72</td>
<td>54.93</td>
<td>10.72</td>
<td>114.99</td>
</tr>
<tr>
<td>7</td>
<td>76.59</td>
<td>54.89</td>
<td>10.94</td>
<td>119.64</td>
</tr>
<tr>
<td>8</td>
<td>46.30</td>
<td>52.28</td>
<td>15.79</td>
<td>249.46</td>
</tr>
<tr>
<td>9</td>
<td>49.06</td>
<td>53.81</td>
<td>8.63</td>
<td>74.56</td>
</tr>
<tr>
<td>10</td>
<td>62.86</td>
<td>49.72</td>
<td>8.09</td>
<td>64.30</td>
</tr>
<tr>
<td>11</td>
<td>69.70</td>
<td>50.52</td>
<td>9.44</td>
<td>89.91</td>
</tr>
<tr>
<td>12</td>
<td>45.61</td>
<td>55.00</td>
<td>6.77</td>
<td>45.84</td>
</tr>
<tr>
<td>13</td>
<td>74.47</td>
<td>50.37</td>
<td>8.14</td>
<td>66.30</td>
</tr>
<tr>
<td>14</td>
<td>58.82</td>
<td>54.00</td>
<td>11.25</td>
<td>126.53</td>
</tr>
<tr>
<td>15</td>
<td>43.18</td>
<td>57.32</td>
<td>9.14</td>
<td>83.45</td>
</tr>
<tr>
<td>16</td>
<td>85.00</td>
<td>55.24</td>
<td>9.07</td>
<td>82.19</td>
</tr>
<tr>
<td>17</td>
<td>51.16</td>
<td>57.77</td>
<td>7.05</td>
<td>49.71</td>
</tr>
<tr>
<td>18</td>
<td>40.26</td>
<td>44.33</td>
<td>7.51</td>
<td>56.33</td>
</tr>
<tr>
<td>19</td>
<td>48.98</td>
<td>50.46</td>
<td>8.35</td>
<td>69.74</td>
</tr>
<tr>
<td>20</td>
<td>88.00</td>
<td>44.84</td>
<td>7.78</td>
<td>60.56</td>
</tr>
<tr>
<td>21</td>
<td>40.00</td>
<td>52.72</td>
<td>5.91</td>
<td>34.92</td>
</tr>
<tr>
<td>22</td>
<td>100.00</td>
<td>52.39</td>
<td>9.11</td>
<td>82.95</td>
</tr>
<tr>
<td>23</td>
<td>69.70</td>
<td>55.52</td>
<td>10.96</td>
<td>120.08</td>
</tr>
<tr>
<td>24</td>
<td>44.11</td>
<td>56.00</td>
<td>6.46</td>
<td>41.71</td>
</tr>
<tr>
<td>25</td>
<td>50.50</td>
<td>56.56</td>
<td>12.20</td>
<td>148.88</td>
</tr>
<tr>
<td>26</td>
<td>85.71</td>
<td>48.47</td>
<td>8.71</td>
<td>75.84</td>
</tr>
<tr>
<td>27</td>
<td>39.39</td>
<td>47.92</td>
<td>8.78</td>
<td>77.03</td>
</tr>
<tr>
<td>28</td>
<td>41.34</td>
<td>52.37</td>
<td>7.62</td>
<td>58.13</td>
</tr>
<tr>
<td>29</td>
<td>67.50</td>
<td>57.89</td>
<td>8.40</td>
<td>70.56</td>
</tr>
<tr>
<td>30</td>
<td>75.00</td>
<td>56.67</td>
<td>10.42</td>
<td>108.60</td>
</tr>
<tr>
<td>31</td>
<td>58.62</td>
<td>58.00</td>
<td>9.78</td>
<td>95.63</td>
</tr>
<tr>
<td>32</td>
<td>69.65</td>
<td>53.45</td>
<td>6.84</td>
<td>46.83</td>
</tr>
<tr>
<td>33</td>
<td>66.67</td>
<td>60.56</td>
<td>6.58</td>
<td>43.28</td>
</tr>
<tr>
<td>34</td>
<td>64.86</td>
<td>58.00</td>
<td>9.29</td>
<td>86.35</td>
</tr>
</tbody>
</table>
PCI Scores and Variables of Organizational Context

PCI scores were examined in relationship to the three variables of organizational context tested earlier in connection with workflow structure.

PCI and School District (Sub-problem 3.1). Table 24 presents the results of the analysis of variance conducted to test for inter-district differences on school PCI scores. Since the F ratios were significant at the .10 level in both the junior and senior samples, multiple-range tests (Scheffe procedure) were carried out on pairs to investigate the source of the significant omnibus F values. The results of these tests are found in Table 25.

Table 24
Analysis of Variance Results For The Difference Between PCI Scores of Schools Grouped By District

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean Squares</th>
<th>F Ratio (d.f.)</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>15.03</td>
<td>1.093 (3,30)</td>
<td>.3671</td>
</tr>
<tr>
<td></td>
<td>13.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>23.73</td>
<td>3.798 (3,8)</td>
<td>.0583*</td>
</tr>
<tr>
<td></td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>17.12</td>
<td>3.635 (3,18)</td>
<td>.0328*</td>
</tr>
<tr>
<td></td>
<td>4.71</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10
Table 25

Results Of Multiple Range Tests On PCI Scores of Schools Grouped By District Using the Scheffe Method Of Multiple Contrasts

<table>
<thead>
<tr>
<th>Districts</th>
<th>Difference Between Means</th>
<th>Difference Required For Significance (.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Senior Sample</td>
<td>Junior Sample</td>
</tr>
<tr>
<td>A, B</td>
<td>1.3692</td>
<td>1.555</td>
</tr>
<tr>
<td>A, C</td>
<td>6.1534*</td>
<td>1.2531</td>
</tr>
<tr>
<td>A, D</td>
<td>4.5017</td>
<td>4.0430*</td>
</tr>
<tr>
<td>B, C</td>
<td>4.7842</td>
<td>0.302</td>
</tr>
<tr>
<td>B, D</td>
<td>3.1325</td>
<td>2.488</td>
</tr>
<tr>
<td>C, D</td>
<td>1.6517</td>
<td>2.790</td>
</tr>
<tr>
<td></td>
<td>Senior Sample</td>
<td>Junior Sample</td>
</tr>
<tr>
<td>A, B</td>
<td>5.426</td>
<td>3.540</td>
</tr>
<tr>
<td>A, C</td>
<td>5.426</td>
<td>3.540</td>
</tr>
<tr>
<td>A, D</td>
<td>5.426</td>
<td>3.697</td>
</tr>
<tr>
<td>B, C</td>
<td>5.426</td>
<td>3.375</td>
</tr>
<tr>
<td>B, D</td>
<td>5.426</td>
<td>3.540</td>
</tr>
<tr>
<td>C, D</td>
<td>5.426</td>
<td>3.540</td>
</tr>
</tbody>
</table>

*Significant at .10

The range of differences in means in the junior sample was from 0.302 to 4.0430, and from 1.3692 to 6.1534 in the senior sample. The multiple test results revealed only two significant mean differences among districts—between districts A and D in respect to their junior secondary schools and between districts A and C with respect to their senior schools. On the basis of these results, it was decided that not enough differences existed among districts to warrant analyzing them as separate samples. Consequently,
the schools were now considered as belonging to the whole sample and either the junior sample or the senior sample. The analysis continued on this basis.

**PCI and Type of School (Sub-problem 3.2).** The next test involved PCI scores and the type of school—junior secondary mean score compared with senior secondary mean score using a t-test. The mean senior score was 50.12, that of the junior schools 55.13. Table 26 displays the t-test results. The difference between the means was found to be significant.

<table>
<thead>
<tr>
<th>t-value</th>
<th>degrees of freedom</th>
<th>t probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75</td>
<td>32</td>
<td>&lt;.10</td>
</tr>
</tbody>
</table>

**Table 26**

`t-Test Comparing Junior and Senior Mean Scores on Pupil Control Ideology`

**PCI and School Size (Sub-problem 3.3).** In view of the significant differences between the two school types, examination of the relationship of PCI to school size was conducted on each type separately. Kendall's Tau was employed as the coefficient of correlation. The findings are
shown in Table 27. No significant findings were apparent.

Table 27
Correlations Between School Size and School Pupil Control Ideology Scores Using Kendall's Rank Correlation Coefficient Tau

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>VALUE OF TAU</th>
<th>PROBABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td>-.090545</td>
<td>.2810</td>
</tr>
<tr>
<td>Senior</td>
<td>-.076761</td>
<td>.3632</td>
</tr>
</tbody>
</table>

PCI and Workflow structure (Sub-problem 3.4). Kendall's Tau was used to test the degree of correspondence between school score on PCI and school score on Diversification of Control. The results obtained when Tau was calculated in each of the three samples are shown in Table 28. Significant results were evident in both the whole and junior samples. A similar analysis tested the extent of the relationship between PCI scores and Diversification of Equipment scores. The results are reported in Table 29. Significant values were obtained in both the whole sample and the junior sample.
Table 28
Correlation of Diversification of Control Scores With Pupil Control Ideology Scores Using Kendall's Tau

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-.2319*</td>
<td>-.3257</td>
<td>.2321*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10

Table 29
Correlation of Diversification of Equipment Scores With Pupil Control Ideology Scores Using Kendall's Tau

<table>
<thead>
<tr>
<th></th>
<th>WHOLE SAMPLE</th>
<th>SENIOR SAMPLE</th>
<th>JUNIOR SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-.2466*</td>
<td>-.1515</td>
<td>-.2160*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10
SUMMARY

This chapter has presented the results of the analyses performed in the study. Two groups of items were identified as homogeneous sets serving to discriminate between the workflow structures of junior secondary schools and senior secondary schools. One set of items was labelled Diversification of Control in accordance with the conceptualization of the Diversification of Workflow instrument and in accordance with the predominance of control items in the group. In addition to discriminating between schools according to type (junior secondary and senior secondary), Diversification of Control items also differentiated among school districts when schools were so grouped. School size was not found to be related to school scores on Diversification of Control.

The five items constituting the second homogeneous set all dealt with equipment and were labelled Diversification of Equipment. The items as a group discriminated between school types and also among districts (particularly at the junior secondary level). School size, when controlled for type, was not found to be significantly associated with school scores on Diversification of Equipment. No significant relationship was evident between scores on Diversification of Control and scores on Diversification of
Pupil control ideology scores were examined and found to be significantly different according to type of school. The relationship of PCI to school district, school size, and school workflow structure was also tested. School size was not found to be related to school PCI scores and PCI scores were found to be significantly different for district only in junior secondary schools in two of the four districts and for senior secondary schools in two districts.

An examination of the relationship between PCI and Diversification of Control scores revealed significant associations in the whole sample and in the junior sample. Significant inverse relationships were identified between school pupil control ideology scores and school scores on Diversification of Equipment in both the junior sample and the whole sample.

The foregoing results are discussed at length in the next chapter. Two further analyses made necessary in the attempt to explain some of the findings are also presented and discussed.
Chapter 5
DISCUSSION OF THE FINDINGS

This chapter discusses the findings of the study and examines them under three major headings. The Diversification of Workflow results are discussed in the first section, the relationship between workflow structure and variables of organizational context is examined in the second section, and the findings dealing with Pupil Control Ideology, its relationship to variables of organizational context, and its connection with workflow structure, are discussed in the third section. A summary concludes the chapter.

DIVERSIFICATION OF WORKFLOW (Sub-problem 1)

This section deals with the results of the analyses undertaken with respect to Sub-problems 1.1 and 1.2 and discusses them under two headings—Verification and Refinement of the Instrument, and Dimensions of Workflow Structure.

Verification and Refinement of the Instrument (Sub-problem 1.1)

With respect to the Diversification of Workflow
results, the interpretation was a complex matter. The failure of the items to associate according to the six initially conceptualized dimensions called into question the basic conceptualization of the workflow structure as having six dimensions. As a measure of whether or not reasonable doubt could be cast on the six initial dimensions, it was decided to subject the Diversification of Workflow items to scrutiny by a group of secondary school administrators. Kelsey had pilot tested the items to see if they were viewed as representative of policies and procedures in secondary schools (1973: 252). His results indicated that the items were seen by secondary school administrators as reasonable descriptors of secondary school operations. In the present study, thirteen administrators were asked to group items that they thought were similar. No indication was given as to how many groups might be expected nor as to what means of conceptually linking the items might be appropriate. The groupings obtained were then subjected to a Latent Partition type of analysis to see how closely they corresponded to the originally defined groups of items.

The analysis has several stages of output generation. The first stage involves the production of a joint proportion matrix which shows the proportion of sorters who place a particular pair of items in the same category.

Following the generation of the joint proportion matrix, the program separates the matrix into latent
categories. On the first run, no specific number of categories was requested, with the result that the program produced nine categories. Inspection of these categories revealed that all of the equipping items had been grouped together, five of the seven sequence items had been grouped together, the two placement items had been grouped together (but with two items from other categories), and the control and scope items had been divided among the other groupings.

At this point, several categories were consistent with those initially conceptualized. For the remainder, the groupings were not as closely associated as would have been desirable. The eigenvalues associated with the nine groups indicated that it might be more reasonable to use only eight categories since one eigenvalue was less than 1.000.

On the eight category run, two small groupings were placed together, with the remaining classifications unchanged. This new grouping included seven items—six of which were from the original control dimension. These results seemed more supportive of the original groupings, however, one eigenvalue was again less than 1.000 so another run was made, this time requesting seven categories.

The seven category run placed all sequence items together, all equipping items together, and all evaluation and reporting items together. Control items were basically split into two groups, scope items were scattered over various groups, and placement items were grouped together
but placed with the sequence group.

These results indicated that there may be little perceived (or real, for that matter) difference between the conceptualized dimensions of placement and sequence. The small number of placement items may, however, be a factor contributing to their inclusion with items which are not far removed in terms of school operation.

With respect to the split in control items, it appeared that the participants had divided these items into one category dealing with student attendance and one dealing with timetabling, programming, and spare periods. An inspection of the labels that some of the sorters attached to their groupings supported this notion.

In essence, this analysis supported the original conceptualization of the Diversification of Workflow items as representative of a number of underlying dimensions. Although some confounding of the items conceived as scope items occurred, and the control items were viewed as being of two types rather than of one, the Diversification of Workflow instrument may be viewed as possessing face validity and also as being consistent with its conceptualization.

**Dimensions of Workflow Structure (Sub-problem 1.2)**

In view of the above support for the initial
conceptualization, the emergence of only two dimensions along which schools may be differentiated is rather surprising. In harmony with the conceptual framework of the study, the first dimension may be seen as a Diversification of Control dimension along which schools vary according to how diverse and flexible their control procedures are. The second dimension, Diversification of Equipment, may be viewed as a dimension along which schools vary with respect to the extent that their equipment is diversified.

Considering, however, that the conceptual framework incorporated six dimensions, further discussion of the results is desirable. It may be that secondary schools really do differ only with respect to the extent of their diversification of equipment and their diversification of control procedures. Alternatively, the possibility exists that the Diversification of Workflow instrument is, in its present form, too crude to pick up the more subtle differences which might need to be identified in order to define other dimensions. Also, given the selected nature of the present sample, schools from different areas might well differ sufficiently in their responses to the present form to enable other dimensions to emerge (it might be noted that Kelsey, in his comparative study, identified two control-related dimensions). That is, because the schools in the study were selected from one particular geographic area, they may be similar enough in their dimensional
characteristics to mask other underlying dimensions. This leads to a consideration of the findings regarding the investigation of workflow structure and its relationship to variables of organizational context (Sub-problem 2).

DIVERSIFICATION OF WORKFLOW AND VARIABLES OF ORGANIZATIONAL CONTEXT (Sub-problem 2)

The relationship of Diversification of Control and Diversification of Equipment to the three variables of organizational context noted in Sub-problems 2.1, 2.2, and 2.3 is discussed in the following sections.

District Differences (Sub-problem 2.1)

A question raised in the Diversification of Workflow analysis deals with the significant inter-district differences with respect to the diversification of control. Districts A and B are shown as significantly different from districts C and D with respect to the workflow structure of their senior secondary schools. The results of correlating size with scores on Diversification of Control show no significant relationships which might profitably be explored to explain the differences. There are, however, other plausible explanations.

The possibility exists that the policies and regulations issued by the respective district central
offices are such that control procedures reflect fairly closely these policies and regulations. In view of the recent trend towards greater decentralization in school systems, the likelihood of this may be considerably less than what it might have been some years ago. There is no reason, though, to completely exclude it from consideration as an influencing factor, especially since Kelsey's study demonstrated the importance of school district as a factor (Kelsey, 1973: 226-228). Other possibilities, for which insufficient data were made available by respondents, include:

1. Length of time that the principal has been at the school.
2. Amount of experience of the principal.
3. General age and experience of the teaching staff.
4. Differences in hiring practices for administrators—a consideration which introduces the superintendent and other central office personnel as possible factors above and beyond their presence as factors in the issuance of regulations.
5. Type of junior secondary school preparation and control procedures in effect. The suggestion here is that junior control procedures might be linked to those found in the receiving senior school.

In general, however, it is difficult to explain
definitely the significant inter-district differences found in the study. Some considerations which might serve to explain the differences have been noted above, but nothing in the study suggests that one explanation is more plausible than another. The examination of these district differences remains incomplete.

With respect to school scores on Diversification of Equipment, district D differed significantly from districts A, B, and C, in the junior sample, from district C in the senior sample, and from districts B and C in the whole sample. The most reasonable explanation for the low scores for schools in district D compared to schools in the other districts is that district D has more of its equipment housed in a central district facility than do the other districts. Consequently, school equipment lists in District D do not necessarily reflect equipment which is actually in the school but inventoried in the central location.

School Type and Dimensions of Workflow Structure (Sub-problem 2.2)

Since the control diversification dimension was constructed from items which were identified as junior-senior discriminators, the school types should have been clearly separable on this dimension. This was indeed the case (t=7.09, df=32, p<.0001). That is, the constructed dimension does serve to distinguish clearly between junior
and senior schools. The higher senior scores are consistent with the idea that senior secondary schools serve a client group which requires less uniform, less simple means of control than does the junior school client group. In view of this, it is interesting to speculate on the nature of the control processes in those senior schools with low scores and those junior schools with high scores (although the highest junior score was still below the mean of the senior schools).

The senior schools appear much more varied in their control scores than do the junior schools (senior variance 80.28, junior variance 11.49). This variance difference is significant at the .05 level ($F=6.98$, $df=11,21$, $p<.0001$). In terms of their control diversification, then, junior schools do not appear to differ greatly, nor are they particularly diversified. Senior schools, on the other hand, are usually much more diverse in their control procedures. There are, however, senior schools whose scores are more typical of the junior school scores. The three senior schools with the lowest scores, it was noted, are found in districts A and B. Possibly, it is the wide variance in senior control diversification in these districts which accounts for the significant inter-district differences discussed earlier.

The Diversification of Equipment dimension was also constructed from discriminating items. Accordingly, the $t$-test of mean scores for school types showed the five-item
group to clearly differentiate between junior and senior secondary schools \((t=2.86, \ df=31, \ p<.10)\). The presence of more diversified equipment in the senior schools may be partially the result of an attempt to meet the needs of more sophisticated courses (e.g. media or art courses) not available in junior secondary schools. Also, in some instances, senior secondary schools act as repositories of equipment which is shared by the junior secondary or elementary schools nearby.

**Size and Dimensions of Workflow Structure (Sub-problem 2.3)**

Size of school was not found to differ significantly across the four school districts. This finding lessens the probability that school district is a major determinant of school size. Rather, when viewed in conjunction with the significant inter-type differences on size, the results indicate that type of the school may be the more important factor—at least for schools within the same geographic area.

The failure of size to correlate significantly with the control diversification scores raises other questions. The expectation was that larger schools would probably have higher scores on this dimension simply because of the difficulty in maintaining more uniform or standardized control procedures—particularly at the senior levels. Such
does not appear to be the case. It may be that the same kinds of influences mentioned earlier (see page 115) in connection with inter-district senior school control diversification apply in this instance also.

Similar kinds of influences might be associated with the lack of a significant association between school size and school scores on Diversification of Equipment. In addition, it is possible that school districts prefer to ensure that all schools possess a certain minimum of what is considered to be essential equipment and therefore limit additional expenditures for schools already possessing that minimum of equipment.

The lack of a significant association between school size and either Diversification of Control or Diversification of Equipment is contrary to Kelsey's findings (1973:226). The importance of size as a possible determinant of school workflow structure is therefore not clarified.
SCHOOL WORKFLOW STRUCTURE AND PUPIL CONTROL IDEOLOGY (Sub-problem 3)

Since the unit of analysis in this study is the individual school, it is at this level that the results of the Pupil Control Ideology part of the research are examined. The findings are discussed under the appropriate headings but some general comments are provided first.

Overall, the PCI scores are lower than those reported in earlier studies of American secondary schools. Willower et al., in the original PCI study, found a mean secondary PCI score of 62.3 (1967: 20). Jury et al. found a secondary mean of 58.3 in their later study (1975: 297). The overall mean for the secondary schools (i.e. the mean of secondary school means) in the present study was 53.36, while the mean calculated from individual teacher scores was 52.92. By either calculation, the scores are considerably lower than those in the American studies and more in line with Hamalian's Montreal study where the secondary mean was reported to be 51.00 (1977: 24). The apparent difference between Canadian and American school results may be due to differences in the various samples, however, the results warrant more in-depth research to investigate the reality of the difference and to suggest possible causes. At present, there is a paucity of Canadian work in this area.
An interesting finding concerns the amount of within school PCI score variance. In senior schools, the range of PCI variance was from 45.84 to 89.91 (mean variance 69.53). In junior schools, a much wider range of variance was evident—from 34.92 to 249.46 (mean variance 89.69). While the mean variances are not significantly different (F = 1.29, d.f. = 21,11, p>.10), the difference in the variance ranges is worthy of comment.

The tighter range of senior school variances may suggest that, on the whole, there are neither tightly cohesive nor widely divided staffs with respect to Pupil Control Ideology—regardless of the school PCI mean. On the other hand, junior school staffs may be quite cohesive (e.g. variance 34.92, 41.71), widely separated (e.g. variance 249.46, 148.88), or neither (e.g. variance 77.64, 66.30). These particular findings have greater significance with respect to Diversification of Control and will be discussed from a different perspective later in the chapter.

**PCI and School District (Sub-problem 3.1)**

The results of the analysis conducted to test for inter-district differences in PCI indicated that, as might be expected given the proximity of the school districts, major differences did not exist. Only districts A and B
differed significantly with reference to their junior secondary schools and only districts A and C differed with respect to their senior secondary schools. The finding supports the notion that PCI scores should be relatively consistent within a particular geographic area.

**PCI and School Type (Sub-problem 3.2)**

The school type means for PCI scores were found to be significantly different ($p<.001$). The indication here is that senior secondary school staffs tend to be less custodially oriented than their junior secondary counterparts—a finding relatively easy to interpret in view of the different age groups and consequent behavioral differences found in the students of the two school types.

**PCI and School Size (Sub-problem 3.3)**

School size (controlled for type of school) was not found to be significantly associated with school PCI score. It might be argued that staff in larger schools would find it more difficult to control students, many of whom they would not know, and be consequently more concerned with control (i.e. have higher PCI scores). This does not appear to be the case. It may be that staff in larger schools simply ignore or are much less concerned with the behavior of students whom they do not know, tending to resign
themselves to it somewhat without necessarily becoming more custodially oriented. Also, given that fewer behavioral problems are evident in senior secondary schools, less concern is warranted (the lower senior scores on PCI would support this).

**PCI and Dimensions of Workflow Structure (Sub-problem 3.4)**

The first part of this stage of the analysis concerned the relationship between the PCI of the professional staffs (expressed by the school mean PCI) and the school scores on the control diversification dimension. Only in the whole and junior samples were significant results obtained. The significant results in the whole sample are explained by the lower PCI, higher diversification of control scores of the senior schools in conjunction with the higher PCI, lower diversification of control scores of the junior schools. Taken together, these associations distort the whole sample correlation—an observation borne out by the lack of significant results in the senior sample and the opposite direction of results in the junior sample.

In view of the conceptualization of the link between school staff PCI and school Diversification of Workflow (as measured in this instance by school scores on diversification of control), the lack of significant findings in the senior sample was, initially, somewhat
surprising. However, the attempt to explain the unexpected findings revealed a possible relationship which had not been thought of in the earlier stages of the study.

To date, studies on Pupil Control Ideology have dealt with individual teacher scores or school scores as a whole. The latter emphasis was the one in the present study. However, an important consideration appears to have been overlooked to this point. The amount of variance in the PCI in a particular school may be of major importance. Given a wide range of PCI scores within a school, it appears reasonable to argue that a cohesive, well-integrated force translating these ideologies into practice would be less likely than in a school where there is little variation in PCI scores—where the staff represent a more homogeneous group in this regard. If such were the case, then PCI variance would be an important variable mediating between the staff PCI and the school control processes. Schools with low PCI variance (i.e. having a relatively homogeneous staff) might well be expected to exhibit the previously expected pattern of inverse relationship. High variance schools, however, given the heterogeneity of staff with regard to PCI, could be expected to demonstrate either an inverse relationship or a positive one (or no relationship), depending on whether or not forces for translating the PCI into practice were countered by forces in favour of different control procedures more in line with a different
PCI orientation.

In order to examine this idea, schools were classified as either high or low in PCI variance according to whether their variance was above or below the mean whole sample variance. Similar dichotomous divisions were made for both PCI scores and control diversification scores. The results are displayed in Table 30.

Table 30
Classification of Schools According to Mean PCI Score, PCI Variance, and Diversification of Control

<table>
<thead>
<tr>
<th>SCHOOL MEAN PCI</th>
<th>PCI VARIANCE</th>
<th>SCHOOL SCORE OF SCHOOL ON</th>
<th>NUMBER OF NUMBER TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH*</td>
<td>HIGH*</td>
<td>HIGH*</td>
<td>0</td>
</tr>
<tr>
<td>HIGH</td>
<td>HIGH</td>
<td>LOW</td>
<td>2</td>
</tr>
<tr>
<td>HIGH</td>
<td>LOW</td>
<td>HIGH</td>
<td>1</td>
</tr>
<tr>
<td>HIGH</td>
<td>LOW</td>
<td>LOW</td>
<td>0</td>
</tr>
<tr>
<td>LOW</td>
<td>HIGH</td>
<td>HIGH</td>
<td>1</td>
</tr>
<tr>
<td>LOW</td>
<td>HIGH</td>
<td>LOW</td>
<td>2</td>
</tr>
<tr>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
<td>5</td>
</tr>
<tr>
<td>LOW**</td>
<td>LOW**</td>
<td>LOW**</td>
<td>1</td>
</tr>
</tbody>
</table>

*HIGH indicates that the school was above the mean with respect to this variable
**LOW indicates that the school was below the mean with respect to this variable
The results indicated that the presence of a high PCI variance made it equally likely for a school to have a high or a low control diversification score—regardless of the actual school mean PCI score. Overall, high variance schools with high PCI scores showed a 7-6 split in high-low scores on diversification of control. High variance, low PCI schools split 3-1 in high-low control diversification scores.

On the other hand, low variance schools were much more in line with the originally predicted outcomes. Low variance, high PCI schools split 6-1 in favour of low control diversification. As predicted, Low variance, low PCI schools also aligned themselves in the predicted direction (i.e. high scores on diversification of control)—by a division of 8-2. Clearly, the introduction of PCI variance in a school clarified the relationship between PCI and control diversification. Instead of no discernible pattern being evident, schools now showed relationships that were conceptually coherent in 31 out of 34 cases. Where a staff is relatively homogeneous with respect to the pupil control ideologies of its members, the level of diversification of control in the school's workflow structure reflects the prevailing ideology. Where there is no such homogeneity, it is impossible to predict what level of diversification will exist.

PCI scores were found to be significantly associated
with scores on Diversification of Equipment in both the whole and junior samples. The significant finding in the whole sample appears to be the result of the influence of the significant association in the junior schools. This association, and the associations in the senior and whole samples, was inverse in nature, indicating that custodially-oriented staffs are in schools with low diversification of equipment. In junior schools, then, this suggests that the first alternative explanation of how equipment and PCI might be linked (pages 34-35) may be the correct one. That is, the lack of diversified equipment in junior secondary schools with custodially-oriented staffs may reflect an unwillingness to allow students access to equipment.

SUMMARY

In the first section of this chapter, the results of the analyses conducted with respect to workflow structure were discussed. Two dimensions, Diversification of Control and Diversification of Equipment, were seen to underlie school workflow structure in junior and senior secondary schools. School scores on Diversification of Control were found to be linked with school district affiliation and with school type. No significant relationship was established between size of school and scores on Diversification of Control. Diversification of Equipment was also found to be
linked with school type and with school district affiliation. When controlled for type of school, size was not found to be significantly associated with Diversification of Equipment.

The failure of size to associate significantly with either dimension underlying school workflow structure is contrary to earlier findings (Kelsey, 1973: 226). The influence of size with respect to dimensions of workflow structure is therefore not clarified.

No significant association was found between Diversification of Control and Diversification of Equipment. The two appear to be measuring different aspects of school workflow structure.

An analysis to test the validity of the original conceptualization of workflow structure as having six dimensions was conducted in view of only two dimensions emerging in the present study. The results indicated that the Diversification of Workflow instrument possessed face validity and appeared to be consistent with its initial derivation.

School workflow structure and Pupil Control Ideology were examined in the second section of the chapter. School PCI scores were found to be significantly different according to type of school. No link was established between PCI and either school district affiliation or size of school. School PCI scores were significantly associated with
school scores on Diversification of Control in the whole and junior samples. Incorporation of the within-school PCI variance as a consideration, however, led to the finding that PCI variance in conjunction with school PCI score provided a satisfactory explanation of the unexpected lack of correlation between PCI and Diversification of Control in the senior sample also. Schools with high PCI variance were equally likely to have a low or high score of Diversification of Control regardless of school PCI score. Schools with low PCI variance were found to have the originally expected inverse relationship with scores on Diversification of Control.

PCI scores were found to associate significantly and inversely with junior secondary school scores on Diversification of Equipment. Senior schools also exhibited an inverse relationship but not at the predetermined level of significance.

The next chapter summarizes the study, deals with the implications of the results, including the revision of the theoretical model, and presents conclusions and some suggestions for future research.
Chapter 6

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This chapter summarizes the study and reviews the major conclusions and implications with respect to theory, methodology, and practice.

SUMMARY

The study was an investigation into the workflow structure of junior and senior secondary schools. It constituted an attempt to develop a conceptual framework for identifying dimensions of school workflow structure and possible determinants thereof.

The basic conceptualization for the study was founded in organizational theory, particularly the concept of organizational technology as defined by Perrow (1967, 1970). Schools were viewed as people-processing organizations where raw materials (students) are received as input, processed (have some changes effected in them as a result of the work of the school), and 'outputted' (as graduates). In Perrow's view, the kind of technology used in an organization is a function of the way its members perceive the raw materials to which the technology is to be applied. In conformity with this view, the focus in the study was upon the workflow
structure within which the work activities of the school are carried out and the relationship of that structure to the perceptions of the professional staff with respect to students. A preliminary model incorporating professional staff perceptions of students as a possible determinant of workflow structure was developed. Three variables of organizational context (school district affiliation, school type, and school size) were also considered to be possible determinants of workflow structure and were included in the model.

The development of the model constituted the first stage of the study. Subsequent stages were concerned with:

1. the adaptation and refinement of an existing instrument to measure school workflow structure in a sample of junior and senior secondary schools,
2. the use of the instrument to identify underlying dimensions of school workflow structure,
3. the analysis of the relationships between the variables of organizational context and school workflow structure,
4. the examination of a particular orientation of professional staff towards students, namely, the degree to which staff are concerned with the control of pupil behavior,
5. the analysis of the control orientation, or Pupil Control Ideology, with respect to school district affiliation, school type, and school size, and

6. clarification of the relationship between pupil control ideology and school workflow structure.

The instrument used to measure school workflow structure was Kelsey's Diversification of Workflow instrument, based on the notion of diversification of workflow structure in school—an adaptation of Perrow's concept of technological routinization. Six discrete elements of school workflow structure were hypothesized by Kelsey, each of which could be viewed with reference to the extent of diversification evident. The hypothesized elements were tested with the data from the junior and senior secondary schools and found to be not supported. A subsequent check on the conceptual coherence of the items constituting each element showed that the instrument possessed face validity and was consistent with its conceptualization. Further analysis indicated the presence of only two major dimensions underlying school workflow structure. Possible explanations for this finding were offered. The dimensions was labelled 'Diversification of Control' and 'Diversification of Equipment' in view of the conceptualization of the instrument and the type of item which was predominant on the dimensions.
Analysis of the variables of organizational context showed school districts to differ significantly on school scores on Diversification of Control. Type of school was also found to discriminate clearly with respect to school scores on Diversification of Control. Size of school, when controlled for type, was not found to be associated with Diversification of Control scores. Similar results were obtained with respect to Diversification of Equipment and its association with school district, school type, and school size. The association between Diversification of Control and Diversification of Equipment was not found to be significant, lending support to their existence as separate dimensions of school workflow structure.

With respect to the relationship between size and school type and district, school types were found to differ significantly in size. No significant differences were apparent for school size across school districts.

The part of the study devoted to analysis of the Pupil Control Ideology data revealed that PCI scores do not differ significantly across school districts. They do, however, serve to differentiate clearly between junior secondary schools and senior secondary schools. Size of school, controlled for type, was not found to be a significant variable with respect to Pupil Control Ideology scores.

The analysis of the relationship between school mean
PCI scores and Diversification of Control scores showed no significant association in the senior sample. The attempt to explain this evident lack of relationship led to the discovery that the amount of within-school variance on the PCI scores is a mediating variable between school PCI score and Diversification of Control. When PCI variance is taken into account, prediction of the probable extent of diversification of control is possible for low variance schools. Prediction of the extent of diversification of control for high variance schools is not possible.

The preceding paragraphs have briefly summarized the study. Revision of the model of determinants of workflow structure in the light of the various findings will be discussed under the heading of Theoretical Implications in the next major section of the chapter.

MAJOR CONCLUSIONS AND THEIR IMPLICATIONS

The major conclusions drawn from the study are discussed with respect to three areas—theoretical, methodological, and practical. These areas are treated separately in the following paragraphs. Each conclusion is accompanied by a discussion of its implications.
Theoretical Implications and Implications for Future Research

The study was an attempt to develop a theoretical model of possible determinants of workflow structure in schools by focusing on particular aspects of school organization, their relationship to three variables of organizational context (school district, school type, and school size), and their relationship to the psycho-sociological variable of the Pupil Control Ideology of the school's professional staff.

In view of the findings of the present study, the original model (Figure 2, page 34) might be reconstructed as shown in Figure 7.
Figure 7
The Revised Model of Possible Determinants of Workflow Structure

With respect to the components of the model, several statements may be made:

1. The difference between the PCI scores found in American studies and those found in the present
study and that of Hamalian supports the link between the environment and PCI.

2. Because of the manner in which the districts were selected in the current study, the link between local system and environment could not be tested. It remains in the model as an area for possible future investigation.

3. Type of school can be seen as a variable of major importance. Senior schools are significantly larger (mean size 1114 students) than junior schools (mean size 763 students), have more diversified equipment, have staffs who are more humanistic in outlook (mean senior PCI 50.12, mean junior PCI score 55.13), and have what might be termed moderate variance in staff PCI scores. They are also more diversified in their control mechanisms.

4. When schools have wide variance in the staff PCI scores, focus on other variables is necessary. What these variables are in not clear, but when a staff is not relatively homogeneous in its PCI orientation, other variables mediating between this heterogeneity and the school control procedures may come into play. One could speculate that staff committees, particular influence groups, or the principal himself might in such cases be more closely allied with the score on diversification of
control than the actual PCI mean score. These variables were not part of the present study but the possible relationships between them and school control procedures constitute a potentially fruitful topic for investigation.

5. Future studies, as well as seeking to identify other possibly important links between PCI and school equipment and control procedures, may find profit in examining the extent to which combined junior-senior schools are similar to separate junior or senior schools in terms of their PCI scores, variance, and methods of control. In addition, the degree to which local system regulations affect equipment and control procedures requires investigation. Further studies could also seek to clarify the difference in PCI scores according to geographic location and determine what, if any, patterns are identifiable.

With respect to workflow structure, the implications of finding only two significant dimensions which serve to discriminate among schools require careful investigation. What are the relationships which exist between these dimensions and such considerations as school climate, staff morale, classroom activities, school vandalism, and truancy, for example? None of these relationships was examined in the present study. The potential for
research in these areas is substantial.

Methodological Conclusions and Implications

From a fairly large number of diverse items, the study showed that school diversification of workflow structure could be viewed as being describable according to two dimensions—a ten-item dimension of control diversification and a five-item dimension of Diversification of Equipment. Future studies that focus on these dimensions as they serve to discriminate among other types of schools could test the generalizability of these dimensions. The results of the study show that, while it is possible to take an instrument, such as Kelsey's Diversification of Workflow instrument, designed for comparative research and apply it to a geographically restricted study, it might be wise in such cases to consider using the unrefined form of the instrument. By so doing, it is possible, as in the present study, to test in the new setting not only the applicability of the instrument but also its initial conceptualization.

Conclusions and Implications for the Practitioner

The study has shown that junior secondary schools and senior secondary schools differ significantly along dimensions of control diversification and equipment diversification and that placement on these dimensions is
related not only to the custodial/humanistic orientation of the school staff but also, in the case of Diversification of Control, to the amount of variation present in teacher orientations with respect to this topic. For principals of schools with staffs whose orientations do not vary widely, this may suggest that institution of control procedures at odds with the control orientation of the staff may encounter resistance and possible noncompliance. For higher variance schools, it may be the principal who, as a result of the diversity, is able to institute procedures more in line with his own orientation. There may, of course, be other mechanisms such as staff committees, part of whose function is to resolve the difficulties involved in reaching some degree of consensus on school control procedures. Moreover, since the ease with which particular control procedures are instituted is likely to have much to do with the variance and level of PCI, consideration should be given to the recruitment and placement of teachers with more similar PCI orientations (perhaps as reflected in interview responses or previous reports) if consistency of adherence to control procedures is deemed desirable.

Future research that could conceivably be of benefit to the practitioner would seek to identify the relationship which exists between school scores on diversification of control and actual classroom activities. It can be argued that school-wide control procedures do place constraints on
classroom teachers. Now that a means is available to measure one aspect of school control procedures, other links in an expanded model might be tested. Similar research into diversification of equipment and its relationship to classroom activities could also be helpful.
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APPENDIX A. Diversification of Workflow Form

(Kelsey, 1973: Appendix A)
The Diversification of Workflow Form is provided as it was completed by principals. Several items were found to be scored identically by all principals. These items were therefore not considered in the analyses. An explanation of the method used to calculate scores on items 1 through 11 is provided below. The remainder of the items follow. It should be noted that the numbers used for identifying the items in the body of the thesis are found in parentheses to the right of each item.

**Item 1. Teaching space.** This item reflected the total number of teaching areas calculated as the number of areas per pupil. The decimal resulting was multiplied by 100 for convenience.

**Item 2. Fixed, specialist equipment.** This item considered equipment which is designed to be used in the teaching of specialist subjects and which is not readily portable. The score for this item was the number of areas possessing such equipment expressed as a percentage of the total number of teaching areas.

**Item 3. Total audio-visual equipment.** The score on this item was obtained by considering both the number of pieces of audio-visual equipment and the number of functions which could be performed. Nine possible functions were defined: record, play, and record and play for each of three categories (SOUND, VISION, and SOUND AND VISION). The score for a particular school was the product of number of pieces
and number of functions. For example, a school with ten
overhead projectors (VISION--play), three reel-to-reel tape
recorders (SOUND--record and play), five cassette tape
recorders (SOUND--record and play), and two 16mm film
projectors (SOUND AND VISION--play), would have twenty
pieces of equipment able to perform three of the nine
functions. This school would receive a score of 20 times 3
equals 60.

**Item 4. Total audio-visual equipment.** Item 4 scores were
calculated by considering the number of pieces of equipment
in conjunction with the number of kinds of equipment. In the
previous example, the school would receive a score of 20
(pieces) divided by 4 (kinds) equals 5.

**Item 5. Audio-visual equipment availability.** The score for
this item was obtained by dividing the number of pieces of
equipment by the number of teachers (i.e. by the number of
people who would be sharing the equipment).

**Item 6. Sound equipment.** This item considered SOUND
equipment only and a score was obtained which reflected the
mean quotient of the number of pieces per function divided
by the number of kinds of equipment per function.

**Item 7. Vision equipment.** The score for item 7 was
calculated in the same manner as the score for item 6, this
time considering only VISION equipment.

**Item 8. Sound and vision equipment.** A score for SOUND AND
VISION equipment was obtained in the same way as the scores
for items 6 and 7.

**Item 9. Individual audio-visual equipment.** Only pieces of equipment which could be used for individual study in a small space were considered in obtaining a score on item 9. Typically, equipment such as cassette tape recorders and filmstrip previewers would be included under this item. The score was the number of pieces of such equipment expressed as a percentage of the total number of pieces of audio-visual equipment.

**Items 10 and 11. Duplicating equipment.** The score on item 10 was obtained from a straight count of the number of pieces of duplicating equipment. Item 11 scores were obtained by dividing the number of pieces of equipment by the number of teachers.
The questions on the following pages concern the way in which your school operates. The interest is in how the education of pupils is equipped, sequenced, and evaluated.

Your cooperation is greatly appreciated.
1. Concerning the initial placement of a student in a program area, which of the following best describes the school's policy?
   1. Free student choice
   2. School direction based on some indication of ability and student choice
   3. School direction based on some measure of ability

2. Where there is more than one teaching group for a given subject, how are students assigned to groups?
   1. By random allocation
   2. By a mixture of random allocation and student choice
   3. By student choice moderated by time-table constraints
   4. By student ability moderated by time-table constraints
   5. By student ability

3. What is the policy governing the time at which students arrive each day?
   1. All students start school at the same time
   2. Some students start at a regular time, others need not arrive until the time of their first class
   3. No student needs to arrive until the time of his first class

4. How frequently does it happen that a student has to revise his selection of courses (subjects) because what he originally wanted to do is not possible under the existing time-table?
   1. Frequently
   2. Quite often
   3. Not very often
   4. Very seldom
   5. Never

*Item Number for analysis*
5. When may a student change a course (subject)?
   1. Never
   2. Only at the year end
   3. Only at the end of a semester or term
   4. At any time. Provided that there is sufficient time to start the new course

6. When may a student drop a course (subject) without substituting another?
   1. Never
   2. Only at the year end
   3. Only at the end of a semester or term
   4. At any time

7. How often do cases of program change on the part of students occur?
   1. Never
   2. Rarely
   3. Infrequently
   4. Sometimes
   5. Frequently

8. How often do cases of course (subject) change on the part of students occur?
   1. Never
   2. Rarely
   3. Infrequently
   4. Sometimes
   5. Frequently

9. How often are there cases of students' dropping a course (subject)?
   1. Never
   2. Rarely
   3. Infrequently
   4. Sometimes
   5. Frequently
10. How is student attendance recorded?

1. Daily and formally in home rooms and subject classes
2. In every subject class throughout the day
3. Daily and formally in home rooms only
4. Not at all. Informal cognizance is taken of absence.

11. What are the policies regarding student absence for students above the statutory leaving age?

1. A note explaining absence is required
2. No explanatory note is required but when legitimate absence is explained by note an appropriate symbol is used in class attendance record
3. No note is required; absence is simply recorded

12. How is excessive or inexcusable absence dealt with for students above the statutory leaving age?

1. A standard system operates which sets out limits and consequences
2. A set of procedures is used but each case is dealt with on its merits
3. There is no standard set of procedures and each case is dealt with by an appropriate person in an appropriate way

13. What is the school's policy about the movement of personnel?

1. Staff move to students
2. Students move to staff
3. Students move to areas and staff move to students within areas
4. There are different policies at different levels of the school
14. What is the policy regarding spare periods for students?
   1. Students are not scheduled to have spare periods
   2. Spare periods are time-tabled only in certain grades
   3. Spare periods are avoided as far as possible
   4. Spare periods are avoided as far as possible in certain grades but there is no restriction in others
   5. There is no restriction on the time-tableling of spare periods

15. Is the attendance of students at spare periods recorded?
   1. There are no spare periods
   2. Yes, for all students
   3. For some students
   4. No

16. Are spare periods supervised?
   1. There are no spare periods
   2. Yes, for all students
   3. For some students
   4. No

17. Where do students go during spare periods?
   1. There are no spare periods
   2. All students must be in specified study areas
   3. Some must be in specified study areas, others may be anywhere in the school or its grounds
   4. All may be anywhere in the school or its grounds
   5. All may go anywhere they please

18. Is there a centrally operated detention system?
   1. Yes
   2. No
19. How is homework assigned for pupils above the statutory leaving age?
   1. There is a centrally drawn up homework time-table for all students
   2. There is a centrally drawn up homework time-table for some students
   3. There is no time-table but guidelines are centrally drawn up
   4. Homework is assigned as deemed necessary by the teacher

20. Are any subjects required for students above the statutory leaving age, other than what are specified by government?
   1. More than two subjects
   2. Two subjects
   3. One subject
   4. No required subjects

21. Training in non-academic responsibility for students often takes place in schools. Does it occur in any of the following ways in this school?
   1. There is a students' union or similar body which has elected officers and which is concerned with student welfare and social activities
   2. Students are elected as club or society officers
   3. Students are appointed as club or society officers
   4. Students are represented on school policy making bodies
   5. Appointed students form part of the school's authority structure

22. Is there a regular assigned time for any of the following activities during school time? (Check appropriate boxes)
   Home room/form room business
   "House" business
   Religious ceremonies
   Assemblies
   Free choice activities
   Students' Union business
   Extra-curricular activities
23. Does the school operate a house system or its equivalent? If so, for which of the following purposes?
   1. No house system is used
   2. A house system is used for games only
   3. A house system is used for games and other competitions
   4. A house system is used for both the above purposes and for administrative purposes on special occasions
   5. A house system is used for all the above purposes and for the discharge of pastoral responsibilities throughout the year

24. Is it school policy to attempt to give at least one spare period to every student above the statutory leaving age?
   1. No
   2. Yes

25. Is there a home room teacher or equivalent for each student? If so, which of the following best describes that person's function?
   1. There is no such position
   2. The home room teacher exists as an administrative convenience (e.g. in communication)
   3. The home room teacher functions as above and also carries responsibility for assistance with student program planning and, possibly, pastoral care
   4. The home room teacher has all the above responsibilities and a heavy responsibility for pastoral care

26. If a problem (other than a behaviour problem) concerning a student came to your attention, which staff member would you first want to consult?
   1. An administrator
   2. Guidance personnel
   3. Grade coordinator or equivalent
   4. Subject teacher(s)
   5. Grade coordinator and home room teacher
   6. Home room teacher
27. How is the day to day evaluation of students carried out?
   1. Teachers must comply with school specified procedures
   2. By any method the teacher likes

28. Which of the following best describes the frequency with which teachers are required to submit student marks to a central authority in the school?
   1. Marks required six or more times a year
   2. Marks required four or five times a year
   3. Marks required two or three times a year
   4. Marks required at year end only
   5. Marks required only at special request of an in-school administrator

29. In what form are final marks rendered?
   1. In one standard form
   2. There are several permissible forms
   3. In any form the teacher likes

30. Which of the following best describes the school's policy on the advancement of students from grade to grade or from one course to the next senior course?
    Advancement is dependent on the successful completion of work in the preceding stage:
   1. Always
   2. Almost always, but there are rare exceptions
   3. Usually, but there are some exceptions
   4. Usually, but there are frequent exceptions
   5. Never. Advancement is normally automatic at the year end

31. Is the document on which pupil progress is reported to parents a handwritten document or a computer prepared one?
   1. Prepared by computer
   2. Prepared by hand
32. Which of the following best describes the content of the report form?

1. The report shows marks or grades only
2. The report shows marks or grades and selected comments from a set list
3. The report shows marks or grades, comments from a set list, and teacher written comments if desired
4. The report shows marks or grades and teacher written comments
5. The report consists largely of teachers' written comments with marks or grades added for information
6. The report shows no marks or grades and consists solely of teacher written comments

33. Which of the following best describes the scope of the report form?

1. The report shows achievement only in the subjects studied
2. The report includes a general summary
3. The report includes a general summary and may also carry comments on extra-curricular work

34. Which of the following best describes the way in which report cards are signed?

1. The report is signed by no staff
2. The report is signed by the principal only
3. The report is signed by subject teachers or home room staff only
4. The report is signed by both subject teachers and home room staff
5. The report is signed by one or both the above and by the principal or a senior staff member
35. TEACHING SPACE INVENTORY

Number of teaching areas overall: ..............................................

Number of gymnasia: .............................................................

Number of auditoria which are not also gymnasia: ..........................

Number of swimming pools: ....................................................

Number of libraries: a) which include work space and in which
teaching can take place......................................................

b) which do not have enough work space for
class teaching to be carried out...........................................

Areas not designated as rooms, but in which, nevertheless, teaching
takes place (exclude outdoor areas where teaching may occasionally
take place in fine weather)...................................................

Rooms containing fixed, specialist equipment: **

<table>
<thead>
<tr>
<th>Subject area</th>
<th>Number specially equipped rooms</th>
<th>Subject area</th>
<th>Number specially equipped rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td></td>
<td>Languages</td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td></td>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>Drama</td>
<td></td>
<td>Science</td>
<td></td>
</tr>
<tr>
<td>Applied arts (Printing, TV etc.)..........</td>
<td></td>
<td>Physical Education (e.g. weight lifting)</td>
<td></td>
</tr>
<tr>
<td>Business subjects</td>
<td></td>
<td>Social subjects (Geography, Law ..........</td>
<td></td>
</tr>
<tr>
<td>Domestic subjects</td>
<td></td>
<td>History, Social Studies, Sociology</td>
<td></td>
</tr>
<tr>
<td>Industrial and Agricultural subjects</td>
<td></td>
<td>Psychology, Economics, etc.).............</td>
<td></td>
</tr>
<tr>
<td>Any others</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NB Count only rooms which because of their equipment, are not really suitable for
general purpose teaching of any subject. e.g., a room set up with many wall
maps and used for Geography, but with regular desks or tables as furniture,
would not be counted as having fixed, specialist equipment. Do not include
gymnasia.
APPENDIX B. PCI Form

(Willower, Eidell, Hoy, 1967: 47-49)
INFORMATION: On the following pages a number of statements about teaching are presented. Our purpose is to gather information regarding the actual attitudes of educators concerning these statements.

You will recognize that the statements are of such a nature that there are no correct or incorrect answers. We are interested only in your frank opinion of them.

Your responses will remain confidential, and no individual or school will be named in the report of this study. Your cooperation is greatly appreciated.

INSTRUCTIONS: On the following pages are twenty statements about schools, teachers, and pupils. Please indicate your opinion about each statement by circling the appropriate response at the right of the statement.
INFORMATION SHEET

INSTRUCTION: Please complete this page by checking the appropriate boxes and filling in the blanks where necessary.

1. SEX ( ) Male ( ) Female

2. AGE ( ) 20-29 ( ) 30-39 ( ) 40-49 ( ) 50-59 ( ) 60-69

3. PRESENT POSITION (SPECIFY WHERE INDICATED)
   ( ) Junior Secondary Teacher (subjects____________________)
   ( ) Senior Secondary Teacher (subjects____________________)
   ( ) Other (please specify position____________________)

4. EXPERIENCE AS AN EDUCATOR (DO NOT COUNT THIS YEAR)
   _____ years as a teacher
   _____ years as a principal or vice-principal
   _____ years as a guidance counsellor
   _____ years in other position (please specify____________________)

5. AMOUNT OF EDUCATION
   ( ) Less than Bachelor's degree
   ( ) Bachelor's degree
   ( ) Bachelor's degree plus additional credits
   ( ) Master's degree
   ( ) Master's degree plus additional credits
   ( ) Doctor's degree

6. UNDERGRADUATE PREPARATION
   ( ) UBC ( ) SFU ( ) UVic ( ) Other

7. GRADUATE PREPARATION
   ( ) UBC ( ) SFU ( ) UVic ( ) Other
1. It is desirable to require pupils to sit in assigned seats during assemblies.

2. Pupils are usually not capable of solving their problems through logical reasoning.

3. Directing sarcastic remarks towards a defiant pupil is a good discipline technique.

4. Beginning teachers are not likely to maintain strict enough control over their pupils.

5. Teachers should consider revision of their teaching methods if these are criticized by pupils.

6. The best principals give unquestioning support to teachers in disciplining pupils.

7. Pupils should not be allowed to contradict the statements of a teacher in class.

8. It is justifiable to have pupils learn many facts about a subject even if there is no immediate application.

9. Too much pupil time is spent on guidance and activities and too little on academic preparation.

10. Being friendly with pupils often leads them to become too familiar.

11. It is more important for pupils to learn to obey rules than that they make their own decisions.

12. Student governments are a good "safety valve" but should not have much influence on school policy.

13. Pupils can be trusted to work together without supervision.

14. If a pupil uses obscene or profane language in school, it must be considered a moral offence.

15. If pupils are allowed to go to the washroom without permission, this privilege will be abused.

16. A few pupils are just young hoodlums and should be treated accordingly.

17. It is often necessary to remind pupils that their status in school differs from that of teachers.

18. A pupil who destroys school material or property should be severely punished.

19. Pupils cannot perceive the difference between democracy and anarchy in the classroom.

20. Pupils often misbehave in order to make the teacher look bad.
APPENDIX C. Characteristics of the Accessible Population
The major demographic characteristics of the accessible population of the present study are presented below (Canadian census data). The degree to which generalization to a target population may be made depends on the nature of the finding to be generalized and the relationship between the variables and the characteristics of the target population (Bracht and Glass, 1968: 441).

<table>
<thead>
<tr>
<th>District</th>
<th>District</th>
<th>District</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Population (1976)</td>
<td>131,599</td>
<td>55,464</td>
<td>64,492</td>
</tr>
<tr>
<td>Ethnic Origin (1971) as percentage of population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Isles</td>
<td>62.0</td>
<td>59.0</td>
<td>61.0</td>
</tr>
<tr>
<td>European</td>
<td>17.5</td>
<td>22.1</td>
<td>20.7</td>
</tr>
<tr>
<td>Scandinavian and Slavic</td>
<td>10.5</td>
<td>11.4</td>
<td>10.0</td>
</tr>
<tr>
<td>Asian</td>
<td>2.9</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Other</td>
<td>6.7</td>
<td>5.8</td>
<td>6.2</td>
</tr>
<tr>
<td>Average Income (1971)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>7,264</td>
<td>7,590</td>
<td>8,361</td>
</tr>
<tr>
<td>Females</td>
<td>2,939</td>
<td>2,675</td>
<td>2,784</td>
</tr>
<tr>
<td>Family</td>
<td>10,493</td>
<td>10,987</td>
<td>11,181</td>
</tr>
<tr>
<td>Types of Industry (1971) as percentage of total industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>1.7</td>
<td>1.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>17.9</td>
<td>21.0</td>
<td>17.5</td>
</tr>
<tr>
<td>Construction</td>
<td>7.3</td>
<td>8.4</td>
<td>8.3</td>
</tr>
<tr>
<td>Transportation/Communication</td>
<td>10.9</td>
<td>9.7</td>
<td>12.6</td>
</tr>
<tr>
<td>Trade</td>
<td>22.6</td>
<td>20.0</td>
<td>17.8</td>
</tr>
<tr>
<td>Finance/ Insurance/Real Estate</td>
<td>5.5</td>
<td>4.7</td>
<td>5.4</td>
</tr>
<tr>
<td>Community Business/Personal Service</td>
<td>22.8</td>
<td>23.5</td>
<td>20.4</td>
</tr>
<tr>
<td>Public Administration/Defence</td>
<td>4.8</td>
<td>4.5</td>
<td>6.2</td>
</tr>
<tr>
<td>Unspecified</td>
<td>6.2</td>
<td>6.2</td>
<td>6.8</td>
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