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LA THÈSE A ÉTÉ  
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ATTITUDES OF TEACHERS TOWARD TELIDON: A CASE STUDY OR  
SACRED HEART SEPARATE SCHOOL IN WINDSOR.

by

© Stanley Leroy Cole Braithwaite

A thesis  
presented to the University of Windsor  
in partial fulfillment of the  
requirements for the degree of  
Master of Arts  
in  
Communication Studies

Windsor , Ontario, 1983

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## ABSTRACT

This case study explored the attitudes of teachers at Sacred Heart Separate School in Windsor. The staff and students participated as part of the field trials involving Telidon as an interactive Computer system from March 15, 1982, to June 30, 1982.

Initial interviews focused on the staff's attitudes towards the technology. Personal observations were conducted during a three week period recorded teacher and student usage of the terminal. The final interviews examined the potential and possibilities of the system for education.

The results indicated that the staff experienced a number of problems in trying to implement the system. Five factors appeared to influence the outcome of the Telidon project: 1) the lack of knowledge and information in preparing for the technology; 2) the fear associated with technology and of replacement; 3) the limited educational possibilities; 4) the lack of time and effort - minimal staff involvement; and 5) the lack of leadership in guiding the project to completion. No one factor alone contributed to the failure of the Telidon project at the school. The findings support the lessons of change recited throughout the literature on innovation and development.

#### ACKNOWLEDGEMENTS

I wish to express my appreciation to Dr. Stewart Ferguson for his help throughout all aspects of this research. Also, I would like to extend my thanks to the members of my committee - Dr. Christopher King and Dr. Mary Lou Dietz for their helpful comments, criticisms and continued interest.

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## Chapter I

### INTRODUCTION

Telidon, the Canadian Videotex System, is an interactive or two-way information retrieval service. Using a keypad or keyboard, the viewer, by means of a telephone line or two-way cable, calls up information for display on a modified television set. Telidon's potential as an instructional medium in education has been described as: 1) delivering educational experiences to anyone regardless of location or time; 2) providing interactive capabilities to allow the learner to proceed at his/her own pace with periodic feedback on progress; and 3) graphic capabilities which allow for a wide range of educational illustrations.<sup>1</sup>

#### 1.1 STATEMENT OF THE PROBLEM

This study examines the attitudes of teachers at Sacred Heart Separate school in Windsor toward adopting a technological innovation. The researcher designed the study to investigate the factors influencing and predicting the rate of adoption. The teachers and students participated from April 1st, 1982 to June 30th, 1982 as one of 55 Ontario schools chosen as part of the field trials examining the education-  
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<sup>1</sup> TV Ontario. Telidon and Education: User's Manual. TV Ontario, 1980. p. 17.



al applications of Telidon as an Interactive Computer system.

## 1.2 JUSTIFICATION

The increased interest in and growth of computers offers potential benefits to society and the field of education in particular. People, however, appear unclear and uncertain as to the diverse applications of this technology. The misperceptions and fears the technology generates, creates a lack of understanding of the various factors which lead people to resist change in other areas. Educators presently possess fears in relation to the recent increase in and the use of interactive computer systems in the classroom. Serendipitously, the chance to examine some of the human factors involved in the receptivity of an innovation arose in the spring of 1982. The placement of Telidon in Sacred Heart school provided the opportunity to explore some of the attitudes which may ameliorate the turbulence associated with innovation and development.

## 1.3 RESEARCH METHODOLOGY

The method used to study the attitudes and behaviors of the teachers at Sacred Heart school consisted of a Qualitative Social-Psychological Approach. To observe the staff in their real life situation (school environment), required employing intensive interviewing and participant (personal)

observations as research techniques. Lofland(1976) described qualitative analysis as that which aids the researcher in developing "intimate familiarity" with his/her subject.

The investigator conducted face-to-face audio-taped interviews to record the staff's receptivity toward the innovation. Participant observations served to enrich and supplement the interviews. The researcher collected data which were expected to uncover the teachers' interaction with and perceptions of the technology as an instructional medium.

To respect the confidentiality of the staff at Sacred Heart, the researcher avoided using the staff's names or other identifying information in the research. No one had access to the audio-taped interviews except the thesis committee.

A total of twenty questions comprised the initial and final interview questionnaire covering issues concerning; the teacher's level of knowledge and understanding of the technology, the possible advantages of Telidon in education, the compatibility with other forms of instructional media and the importance of someone in charge of the project (see Appendices A,B,C).

### 1.3.1 Data Collection

To meet the research objectives, the investigator developed an interview and observation schedule. He used the first two taped interviews as a pretest to check teacher response and to determine if the questions covered the Telidon related issues. The three month field trial enabled the researcher to sub-divide the project into three parts:

1. Initial semi-structured interviews with the school staff. (March 31, 1982 - April 16, 1982).
2. Personal Observations proceeded during the middle of the project. (May 25, 1982 - June 11, 1982).
3. Final semi-structured interviews with the teachers, upon completion of the program. (June 21, 1982 - June 28, 1982).

The researcher interviewed the teachers prior to their exposure to Telidon and collected demographic characteristics.

### 1.3.2 Analysis

The interview schedules developed out of a series of thoughts concerning the staff reactions to and position on the Telidon technology. The open-ended questions addressed the staff's attitudes regarding the system's potential while the personal observations reflected their involvement in the project. The analysis of the data collected intended to provide some insight into the characteristics affecting the implementation of an innovation in a school setting. Ex-

cerpts from the interviews along with information derived from personal observations substantiated the staff's receptivity to the innovation - Telidon.

1.4 REVIEW OF LITERATURE

To place this study in proper perspective, the literature on diffusion and adoption of innovation was examined with special reference to the problem of receptivity to change. The aim in this review is to present the fundamental approaches which have appeared in studying the problem, with close attention to their conceptual and methodological shortcomings. In dealing with these problems, I restricted myself to the more formal shortcomings of methodology: 1) measurement problems, 2) problems of definition, and 3) problems of design. The review which follows will not attempt to catalogue all the studies completed in the area but rather to serve as an overview of the traditional views on the diffusion and adoption of innovation in education.

Diffusion research has consisted of a vast collection of studies by researchers from various traditions of research: anthropology, rural sociology, medical sociology, mass communication and education.<sup>2</sup> General observations regarding these traditions can be stated as follows: 1) the agricultural studies concentrated on the adoption of innovations among individual farmers; 2) the studies of medical innova-  
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<sup>2</sup> Everett Rogers. Diffusion of Innovations. New York: The Free Press. 1962. p. 23.

tions dealt with the diffusion and adoption of drugs by doctors in communities; 3) the anthropological work focused on the spread of new farming techniques in nonindustrial societies; and 4) the education studies centered on the adoption rates of innovations in school systems. Each tradition developed independently and emphasized a characteristically different approach. The strategies of diffusion in education grew from two research bases - anthropology and mass communication.

The anthropological approach stressed the diffusion (the spread) rather than the adoption of an innovation. Earlier researchers focused on the individuals and the social consequences of the innovation. In this tradition, researchers concerned themselves with the connections between culture and social change.<sup>3</sup> The analysis involved the individual's reaction to change, channels of diffusion, cultural boundaries and regional differences in receptivity. The basic unit of analysis included groups, villages, cities and organizations. The anthropological approach united the cultural factors with the individual's receptiveness to change.

The traditional research on mass communication concentrated on the flow of the message to the receiver and the receiver's response to the message. The reference group mediated the the message (innovation) as suggested by the two-step flow hypothesis. Researchers examined the various  
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<sup>3</sup> Ibid., pg. 25.

ways in which interpersonal relations intervened in the communication process.<sup>4</sup> They focused on the individual factors which affected his/her decision. With the concurrent impact on small group research and organizational structure, receptivity to change was conceptualized as a result of a complex set of inter-related factors (Rogers and Shoemaker, 1971). Researchers seemed aware of the attitudes of the individual and also considered environmental variables such as group structure (formal and informal) and the communication role (opinion leader and cosmopolite) as critical (Rogers and Agarwala-Rogers, 1976).

Throughout the literature, two schools of thought or perspectives have been associated with the process of change in education: 1) Social Interaction and 2) Research, Development and Diffusion.<sup>5</sup>

The Social Interaction perspective focused on the receiver's perception of and response to knowledge coming from outside him/herself. The process of adoption revolved around the stages through which an individual or group pass as they reach a decision to adopt or reject an innovation. The diffusion of the innovation rested solely on the channels of communication within the receiver group and the in-  
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<sup>4</sup> E. Katz, and H. Hamilton. "Traditions of Research On The Diffusion of Innovation". In Foundations Of Communication Theory. (K. Sereno and C. Mortensen ed.). New York: 1970. p. 343.

<sup>5</sup> R. Havelock. Planning For Innovation. University of Michigan, Ann Arbor, Michigan. 1969. p. 10-28.

teraction of group members. Pioneer educational researcher Paul Mort(1930), studied the adoption rates of educational practices in schools. Mort described the innovation process or the concept of adaptability as following a predictable pattern or stage. He emphasized that there must be an insight into a need, a way of meeting the need, diffusion and adoption of the idea or method.

In recent years, educational research has been influenced by the work of mass communication theorists. Rogers(1962) proposed a model of adoption in which he identified five stages in the process: awareness, interest, trial, evaluation and adoption. Several researchers have cited the innovation decision process as a useful formulation for analyzing educational innovations in schools.<sup>6</sup> Upon closer examination, the innovation decision process described by Rogers paralleled the work of Mort. Mort's final stage of adoption encompassed the entire decision model, whereby he stressed the process of adoption as individual activity dependent upon group interaction.

Theorists of the social interactionist school studied the individual's perception and response to change but neglected the sequences by which the innovation became available. Rogers and Shoemaker(1971) remarked that researchers evaluated the concept of adoption from one point in time, usually after the success or failure of the innovation. Previous re-  
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<sup>6</sup> See also the early research into educational innovations.(Carlson,1965; Kozma,1978; Miles,1964)

search designs employed survey and questionnaire formats to ascertain individual and group patterns of adoption or rejection without critically looking at other intervening variables (environmental, social, religious and political).

The Research, Development and Diffusion school viewed the process of change from an earlier point in time. These theorists studied the process of change from the point of view of the originator of an innovation, beginning with the formulation of a problem based on a perceived need. This school focused on the activity phases of the developer as he/she designed and developed potential solutions to problems. The paradigm involved four phases or areas of activity: Research, Development, Diffusion and Adoption.<sup>7</sup> Within this paradigm, the concept of change took on a larger, more important role. The process involved detailed development, based on scientific knowledge and rigorous testing and evaluation toward developing an innovation which adequately solved a particular problem. They developed strategies for distributing and installing the proposed change in the target system. This theoretical model encountered a number of difficulties: the use of adequate evaluations in educational settings required time and money; the necessary conditions to conduct evaluations never arose in educational environments; evidence appeared lacking to support the educational effectiveness of the innovation or proposed  
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<sup>7</sup> K. Ribble. "The Effect of Planned Change on the Classroom". *Theory into Practice* 1966, 1, 41-45.



method(Miles,1964).

To summarize, the social interaction model involved the process whereby an individual or group adopts or rejects an innovation. It emphasized the sources of information received and the attributes perceived by the individual or group to the innovation. The research, development and diffusion paradigm looked at the change process from an earlier point in time. Here attention rested on the developer of the innovation and the movement through the target group.

#### 1.5 CONTRIBUTION TO THE FIELD

In reviewing the literature, little or no Communication research of this type exists in Canada. This study attempts to provide a modest increase in the area of innovation and development.

#### 1.6 STRUCTURE OF THE STUDY

The conceptual models of adoption, namely, the individual-decision making process (Rogers and Shoemaker,1971) and the analysis of the staff as an organization (Gross, Giac-  
quinta and Bernstein,1971) comprise Chapter Two. Both theories contribute to describing the attitudes of the staff toward the technology in Sacred Heart. Chapter Three presents the research procedure used to obtain the data from the three month project in the school. Chapter Four records the unanticipated responses of the Sacred Heart staff in their

use of Telidon. Chapter Five summarizes the findings and offers some recommendations.

## Chapter II

### THEORETICAL FRAME

This chapter reviews the theories on innovation, and outlines the rationale for their selection, criticism and shortcomings.

Sacred Heart Separate school in Windsor served as a testing ground for the theories on change. The innovation-decision model (Rogers and Shoemaker, 1971) and the organizational paradigm (Gross, Giacquinta and Bernstein, 1971) emerged from the literature as particularly relevant because they focused on the characteristics which alter the rate of adoption for individuals and groups.

#### 2.1 INDIVIDUAL PROCESS

The classical model of adoption developed out of work at Iowa State University (Ryan and Gross, 1943). The original five stage paradigm - awareness, interest, trial, evaluation and adoption - arose out of theoretical reasoning. The empirical evidence appeared in the late 1950s (Beal and Bohlen, 1955).

Rogers and Shoemaker (1971) reformulated the adoption model to allow the concept of rejection to occur. They viewed the innovation-decision model as the period through which an

Individual passes from first knowledge of an innovation to a decision to adopt or reject and then on to a confirmation of the decision. Rogers and Shoemaker divided the model into four distinct stages or steps: Knowledge, Persuasion, Decision and Confirmation. They suggested that the rate of adoption or rejection depended on how the individual perceived his/her needs in relation to the innovation. They viewed the individual's needs as a consequence of five characteristics: relative advantage, compatability, complexity, triability and observability.

1. Relative Advantage: The perception of the innovation as being better than an alternate method.
2. Compatability: The degree to which an innovation conforms to existing values, past experiences and needs.
3. Complexity: The difficulty in understanding and using the innovation.
4. Triability: The opportunity to experiment with the innovation on a limited basis.
5. Observability: The opportunity an individual has to observe the results of an innovation.

Rogers and Shoemaker treated the adoption of an innovation in universal terms, applying their model to all types of decisions by individuals in every situation. They assumed that the individual had the opportunity to try the new or proposed method on a small scale without interference from

others in his/her decision. Although their paradigm covered the general characteristics of how an individual developed his/her decision, they neglected the effects of the personal (fear of the technology), the interpersonal (the staff pressure and the effects of others), and the organization (power struggle, political climate) as events prejudicing the individual's view of the proposed change.

## 2.2 ORGANIZATIONAL PROCESS

Gross, Giacquinta and Bernstein (1971) recognized the attributes proposed by Rogers and Shoemaker as critical to individual adoption of a simple technological innovation. They found Rogers's model inadequate in explaining the receptiveness by staff members as a group in institutions. They developed a paradigm centered on the phenomena occurring in schools.

1. The staff has to develop a clear understanding of the proposed innovation. If the staff possess an ambiguous or erroneous understanding of the innovation, they will be unclear as to the usage of the innovation.
2. The staff members have to possess the capabilities necessary in using the proposed innovation. If teachers lack the skills and knowledge required to operate the innovation, then the usage of the innovation becomes impossible to manage and implement.

3. The staff's ability to use the innovation successfully depends on the availability of the program materials and resources.
4. The staff must be willing to alter their beliefs to incorporate the innovation. If their attitudes are not in agreement with the innovation, then the change becomes difficult to carry out and institute.
5. The staff must be willing to expend the time and effort required to learn and use the proposed innovation effectively.

Gross and others based these five considerations on administration's ability to establish inservice training programs and resources for the staff to successfully apply the innovation.

On closer examination of the organizational paradigm, the characteristics Gross and his colleagues viewed, parallel the attributes put forth in the individual-decision model. Gross and others identified the factors teachers considered in their approach to a new idea. The dominant characteristics resulted in the staff's ability to acquire a clear understanding of the change and the opportunity to have sufficient time to experiment with the innovation. They recommended that administration be responsible for creation and maintenance of feedback mechanisms to reduce the possible problems encountered by the staff.

Although these theories considered the features affecting the outcome of a proposed innovation, they neglected several concerns which appear significant in instituting planned change: the communication process and leadership.

Schultz (1979) stated that teachers comprise a social system in which they interact formally and informally with each other and with groups in the school. Such formal and informal communication between staff members influences how they perceive the innovation. Both paradigms discounted the importance of the communication process in altering the individual's decision to adopt or reject.

Gross and his colleagues considered administration's participation in the project imperative in reducing teacher resistance. They disregarded the importance of someone to lead and sustain the flow of the project in the school. Daniel (1977) stressed in his evaluation of teleconferencing educational materials via satellite to northern Canadian communities, the need for a dedicated and enthusiastic person to take charge of the program. The predominance of having someone committed to carrying the project to completion dictates the success or failure of the program.

## Chapter III

### METHODOLOGY

This chapter has two main objectives. The first is to present the methodology used and the rationale for the selection. The second is to describe the setting and the data collection procedures administered in the study.

#### 3.1 METHOD

Babbie (1979) described field research as an effective means of studying the subtle nuances of attitudes, behaviors and social processes occurring over time. Interviewing and direct observations aided in looking at the attitudes of the staff at Sacred Heart Separate school in Windsor to the three month project involving Telidon. The interview schedule evolved out of an initial speculation as to the staff's position concerning the arrival of Telidon at Sacred Heart school. The researcher prepared a number of topics which appeared suitable for inquiry. He then formulated a series of questions based on his encounters with a few teachers and committee members. These three combined, led to the development of the interview schedules (see appendices A and C). The areas of study central to the observational period comprised the staff's participation in and usage of the system



during the chosen time period (see Appendix B). Both techniques allowed for modification of the research questions and design at any time throughout the study. The precise descriptive statements generated referred only to Sacred Heart school and not to other Catholic schools in the school system. The researcher considered these issues in studying the staff at the school.

### 3.2 THE SETTING

The pupils at Sacred Heart predominantly come from a lower to middle class socio-economic background. The school is situated in the west end of the city. At the time of the research, a total of two hundred and eighty students were enrolled in classes from Kindergarten to Grade 8. The teaching staff consisted of twelve female and three male teachers, ranging in age from twenty-three to sixty years.

The Ontario Educational Communications Authority (OECA) and TV Ontario developed educational software for the Telidon Videotex System. TV Ontario had expressed interest in providing a school in Essex County with the opportunity to explore the educational sequences they had created for Telidon. TV Ontario approached the Roman Catholic School System as a possible candidate to field test the Telidon system. The Head Consultant of Curriculum at the Teacher Center selected Sacred Heart because of the school's resource teach-

er's<sup>8</sup> previous experience in using the Videotex system.<sup>9</sup> She had developed a series of step-by-step learning sequences or pages which were stored in the main data base in Ottawa. The school participated as one of 55 Ontario schools in the field trials for a three month period beginning April 1, 1982 until June 30, 1982. The school library housed the Telidon system for easy accessibility.

### 3.3 RESEARCH METHODOLOGY

On March 15, 1982, the researcher interviewed the resource teacher who had been designated as the project leader, to obtain background information concerning the Telidon project. The researcher recorded the staff's previous involvement, level of information and attitudes toward the technology.

A representative from TV Ontario installed and displayed the Videotex system to the teachers during the lunch hour on the 18th of March, 1982. A videotape produced by the National Film Board on the development of Telidon as a Canadian Videotex System represented the teachers' initial exposure to the technology. The staff's reactions to and  
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<sup>8</sup> The resource teacher is a resource person to the teachers in a school, characterized as creative, innovative, flexible and expert in the area of media and curriculum. Rogers (1962) refers to this type of individual as a cosmopolite.

<sup>9</sup> During the summer of 1980, the resource teacher was involved in learning the operations of the I.O. (Information Provider) Units at TV Ontario's Telidon project headquarters in Toronto.

comments on the film were recorded by the researcher.

The staff and students did not gain access to the Telidon system until the week of April 19, 1982. The school's 'Winter Break' started the last week of March, while the school's religious ceremonies were held the second week of April. No interviews occurred during this period.

The initial interviewing of the teachers commenced on March 31, 1982, and ended on April 16, 1982. The researcher developed a total of twenty questions to explore the staff's attitudes toward using instructional media, computers and Telidon in the classroom. Their level of information, awareness and interest in the project and their views concerning the use of technology in the learning process were examined (see Appendix A). Upon completion of the interviews, the researcher asked teachers not to discuss the nature of the study with fellow staff members in an attempt to minimize the possibilities of teacher bias to the questions. All of the interviews lasted between twenty-five and thirty minutes.

Personal observations took place from May 25, 1982 to June 11, 1982. The researcher observed and recorded the staff's interaction with the terminal, the number of teachers who used the system, class size, grade level, and the group size which appeared to work best with the terminal (See Appendix B). This time frame seemed necessary to obtain the staff's involvement and usage of the system midway through the project.

The final interview period began on June 21, 1982 and ended on June 28, 1982. The questions developed focused on the researcher's previous personal observations of the teachers; some from the initial interviewing period and a number related to the teachers' perceptions of the field trial leader; i.e., the resource teacher (see Appendix C). Throughout the interviewing periods, the researcher assured the staff that their names and other identifying information would not be apparent in the research. The resource teacher's and the principal's title appeared only to separate their attitudes toward the videotex technology (the resource teacher had previous experience with Telidon while the principal represented administration's view towards the Telidon system) as distinct from those of the staff.

## Chapter IV

### RESULTS

This chapter presents the sequence of events which occurred in Sacred Heart Separate school. The data collected fit into the theoretical frame outlined in chapter Two. The Initial interview period represented the Knowledge stage, the In-service Workshop the Persuasion stage, the Observation period the Decision stage and the Final interview period the Confirmation stage. Within each stage, the investigator compiled and presented the attitudes of the staff toward the innovation. The characteristics chosen appeared as the critical factors affecting the success of the project in the school.

#### 4.1 KNOWLEDGE

##### 4.1.1 Initial Interview Period (March 15, 1982 - April 19, 1982)

The afternoon of March 18, 1982, the staff and the researcher viewed the video-tape produced by TV Ontario. At the completion of the tape, the TV Ontario representative presented the Telidon system to the staff. He emphasized the strengths of the system and illustrated the terminal's capabilities by using a series of sequences stored in the data bank. The introductory session ended with a number of


questions. All of the teachers appeared amazed. Many gasped in awe while others shook their heads and could not believe what was happening. The Winter break holidays began the week of March 22, 1982. The week of April 5, 1982 signified the Holy Week ceremonies.

The researcher interviewed the staff and asked them if they had used Telidon prior to the system's presence in the school. No-one had any previous experience with the terminal except the resource teacher who stated that she had been involved in developing sequences for TV Ontario.

Many teachers' fears increased when they heard of Telidon's proposed arrival at the school. Some reacted with surprise and apprehension toward the technology. Others responded with confusion and bewilderment as to the exact nature of Telidon. A few staff members welcomed the opportunity to experiment with the terminal. Still others appeared indifferent expressing the opinion that Telidon's presence represented "something else that was forced on us and that we were going to have to become acquainted with." The most dramatic illustration of the teacher's fear of the technology appeared in their lack of knowledge of the Telidon system.

#### 4.1.1.1 Information Awareness

The teachers at the school received no information on the use of Telidon. Neither sufficient instruction nor the op-



portunity to learn the technology preceded the arrival of the system. One female teacher seemed deeply agitated about the lack of preparation remarked...

"The thing that upsets me is not knowing enough about it [Telidon]. Not being prepared well in advance that it was coming into the school system. It would have been nice to have a course or something. It would have been nice to be well prepared."

Several staff members voiced their discomfort at not being provided with the necessary training to operate and handle the system. Many felt frustrated and distraught at the dearth of energy generated for the project. One senior level teacher responded...

"... that's what we find lacking, all of this equipment is placed in the school and we are supposed to use it, but how are we supposed to get the information? Thousands of dollars have been spent on equipment and we are not trained or informed how to use it adequately."

A couple of teachers expressed their grievance toward administration's neglect in not consulting them (the staff) on the decision to implement Telidon.

"I am not interested in it [Telidon]. I am going to be forced into it. Telidon is going to be something that we have no choice about."

When questioned as to who had helped them in their appreciation of Telidon, the teachers credited the resource teacher with being knowledgeable and helpful. The principal and staff viewed themselves as having a limited understanding of Telidon. They expressed their confidence and security in knowing that the resource teacher knew the system to provide

assistance. The resource teacher, however, commented that she lacked the information for the staff...

"I have a working knowledge of it [Telidon] which equips me to make it function. There is a real need for me to learn its full potential and capabilities. ... It threatens me in the sense that I want to know more so that I can give more in terms of teaching but I do not know how to gain that information."

She questioned her own comprehension of the terminal and felt handicapped in assisting the teachers.

"I am worried about what I don't know. The mechanical breakdown - I don't know how to fix it [Telidon]. That frightens me a bit. The fear of not knowing enough to satisfy needs is frightening."

The resource teacher referred to several people who provided her with instruction but she still did not feel fully satisfied that she understood the system completely. She pointed out ...

"It has not been just one person, but a system [sic] of people. ... It basically has been self-knowledge, I would have liked more information."

As the project leader,<sup>10</sup> she anticipated the staff's involvement as one of fear of the technology, i.e., Telidon. She summarized what she felt their participation might result in.

"I can see one or two skirting around having to get involved, dumping on me to do it rather than getting involved themselves, and I know that they all would like to get involved but until they are dragged into it, if I am not the aggressor they will sit back and not be a part of it [Telidon]."

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<sup>10</sup> The term 'project leader' was synonymous with the term resource teacher.



The staff expressed their reluctance and hesitancy to participate because they received no information concerning the project. Many seemed unclear as to their role in using the technology. This led the staff to bias their views toward the system.

#### 4.1.1.2 Fear of Technology and Replacement

The staff viewed the learning process as incorporating visually oriented materials. Many teachers acknowledged using overheads, slides, films and movies in helping to supplement and enrich their teaching methods. The arrival of several micro-computers in the fall of 1981, created some conflict for the majority of the staff. Many mentioned that they had used the school's computers on a limited basis. When the investigator questioned the staff about the possibility of using and remotely being replaced by Telidon, they all responded confidently that the use of any type of technology in the classroom required someone to operate the hardware and supervise the students. One senior teacher explained.

"If you are confident in your role as a teacher then you can understand what it [Telidon] is and why you don't feel threatened by it, it is those people who are teetering on the brink wondering what they are doing here who are probably most inclined to feel threatened by a computer."

Another teacher stated the importance of the teacher's role in the learning process.

"... Some teachers may feel pressured into believing that the kids will not believe what they

say... Teachers have to be willing to tell kids that they do not know it all because we too are asking questions. If you are willing to be open to the fact that you do not know everything, that Telidon can teach everyone something, then I do not think that your role will be endangered or pressured... You have to be honest with the kids."

Several teachers surmised that the concept of teacher replacement by Telidon appeared as a real possibility at the higher educational levels (secondary and university) but not at their own. One primary teacher noted that "the interpersonal relationship with children was vital to the learning process." Several others also emphasized the importance of maintaining interpersonal relationships with children.

"I can provide children with caring. Also any kind of positive reinforcement that children really need. It is one thing to see congratulations printed on the screen and it is another thing to actually touch the child and pat them on the head. The one-to-one interpersonal contact is far more important in teaching than the curriculum and content. The computer can take care of that (curriculum and content) but not the interpersonal skills."

One primary teacher who feared being replaced by the recent advent of micro-computers and the presence of Telidon, perceived the educational system as giving up the basics of learning to replace them by computers and computer literacy:

"Telidon, sure it frightens me, it really does! The world is becoming so technical, I very much fear the socialibility of society and the future. If Telidon is used to do research, shopping and everything at home, is that going to get you out or will it put you in a little room with a machine? If you plug a child into a computer because he/she may have the intelligence, does it do that child any good? We are leaving a whole half of that person undeveloped. You may be developing the intellectual side of him/her but the social you are not."

Teachers visualized their roles continuing with Telidon being used as an effective teaching aid. Some viewed their responsibilities changing from the present lecture style to one of a resource, or facilitative person for students. The principal maintained a different position in viewing the presence of micro-computers and the availability of Telidon. She anticipated a reorganization of her present position to one of a coordinator and counsellor directing teachers to available sources for materials.

"The teachers' role will change. I see teachers more in the counselling role, more in the directing role. We will have to have teachers who can be perceptive of student needs telling them where to go to get information. The person in the classroom will become more an educator and less a teacher. ... Teachers will always be needed ... if they are not willing to change with the needs of the times then there will be displacement."

The staff had ambivalent feelings about the Telidon technology. Their apprehensiveness appeared as fear toward using the terminal and the frustration of making mistakes in front of the class. They all recognized the terminal's presence as temporary. Many questioned the relevance of adjusting to and using the terminal for a short period of time.

#### 4.1.1.3 Attitude Formation To Telidon

In evaluating the potential of the system as an educational medium, many teachers stated they lacked relevant information to develop a position toward the technology. The staff's prejudices evolved from their earlier exposure and

involvement with the school's computers. Some visualized Telidon as creating a restructuring of the educational system by allowing children to access more information. Others responded negatively arguing that Telidon's presence "would require us to become more knowledgeable in the workings of the system." One female teacher stated...

"I do not know that much about it [Telidon]. I am assuming that it would be very good. As far as the computers, they seem to be so fascinating that children can learn and have the access to things which books and other things can provide but in a limited manner. I do not know how practical it would be on every subject level or in every grade level."

The resource teacher's previous involvement allowed her to critically evaluate the system's educational potential. She explained that

"... The software and the programing that is available educationally right now, is not that terrific because it has been done by technicians rather than teachers. It has to have the two together to be effective. There are alot of bugs in the system that cause it to be less effective at this point but its potential is great."

Although some of the negative features of Telidon appeared as minor problems, they did not seem to diminish the resource teacher's personal enthusiasm and appreciation of the terminal's capability.

The initial interview period served as an inquiry into the staff's awareness and knowledge of the Telidon system. Individually and as a group, they cited their uneasiness in receiving neither information nor assistance in their attempts to understand the technology. Some of the staff de-

veloped reservations about the system's educational possibilities while others feared changing their present teaching methods to experiment with a temporary program. Gross and others stressed the importance of staff members gaining a clear understanding of what the proposed change entailed. They also emphasized that some type of information be available for staff members to critically evaluate the innovation in terms of their classroom environment. Both of these factors were non-existent at the time of the project at Sacred Heart school. The staff appeared unable to adequately assess the system or understand their role in using the terminal. These unresolved problems affected subsequent stages of the project.

## 4.2 PERSUASION

### 4.2.1 Inservice Workshop (April 19, 1982)

The resource teacher designed a workshop for the afternoon of April 19th. Ten teachers and the principal attended the session to familiarize themselves with the terminal. IV Ontario sent a representative to assist in the introduction of the system. He led the teachers through a series of programs requiring them to evaluate the content of various sequences located in the Telidon data bank (Vista). The representative asked the staff to fill out questionnaires on items which referred to the usage of the sequences in the classroom: clarity of the picture, readability, and understandability.

The resource teacher directed the staff through a series of steps on how to gain access on and off the terminal. She described the possible problems which could be encountered and also prepared work sheets to accompany some of the lessons located in the Vista data bank. She proceeded through a series of programs explaining to the teachers how the work sheets could be used in conjunction with the terminal. The teachers tried the system and evaluated the work sheets. The project leader instructed the staff to use the terminal at any time and to call upon her if they needed assistance.

The staff appeared impressed by the storage and retrieval capabilities of the system. Many had anticipated that Telidon would provide similar functions to the micro-computers. A few pointed out that "Telidon lacked the programming capabilities", while a few more complained of "Telidon's lack of student involvement and interaction". One teacher stated "We have to keep their (students) attention level high - with them on the edge of their seats", suggesting that Telidon required more effort and supervision to insure the success of student learning.

Several teachers mentioned the exceptional quality of the programs, but the sequences appeared "not to have been produced by people who work with children". After an opportunity to judge the system, the staff felt they understood the needs of children in a more meaningful way than the technicians and developers of the sequences of the Telidon system.

The inservice workshop stimulated interest for a few teachers, while the majority seemed unclear as to how they were to use the terminal. Gross and his colleagues stated that teachers had to acquire some preparatory training before using the innovation. The workshop attempted to provide an opportunity but the staff felt that the services arrived too late to incorporate them into their classroom schedule.

#### 4.3 DECISION

##### 4.3.1 Observation Period (May 24, 1982 - June 11, 1982)

During the three week observation period, some of the staff used Telidon six out of a possible fifteen days. Only the resource teacher and two junior level teachers actively employed Telidon in classes throughout this time frame.

The resource teacher conducted four inclass sessions. She apparently took over for the teachers in showing their students the technology. The project leader explained the development and operation of the Telidon system and showed the children how to access various materials located in the terminal's data bank. The classes varied in size from four to twenty-five children and the sessions lasted approximately one hour.

The two junior level teachers used the terminal as a review of previously taught class work. Both had previewed the Telidon sequences prior to fitting them into their class

lesson. The teachers allowed the students the opportunity to interact with the system. They instructed the students to push the keypad to select an appropriate answer from the list of responses shown on the screen. One teacher designed her own work sheet to accompany the review, while the other utilized a work sheet prepared by the resource teacher. Both teachers operated the system for an hour with a class size of twenty-five children.

The older students enjoyed the opportunity to use the terminal. For many, the terminal's graphic quality and elaborate colour schemes created the most excitement. One grade 8 student responded:

"... everything is becoming computerized. Most students find it boring to get out a textbook and read, but to look at Telidon, especially the graphics and the information, is really fun!"

Several appeared disappointed at the speed in which the pages changed and the time required to dial into the system. The younger children marvelled at the way in which the pictures evolved on the screen. They too, found the graphics fascinating and appealing. Many students mentioned that working in small groups appeared superior to working in a large class - "better to see the terminal and a chance to work the keypad". It became apparent that the newness of the system captivated the students' interest and their enthusiasm. During the short period of time the terminal existed in the school, the students seemed to adapt quickly and without hesitation.



#### 4.4 CONFIRMATION

##### 4.4.1 Final Interview Period (June 21, 1982 - June 28, 1982)

At the conclusion of the three month project, nine teachers had not used the terminal while four teachers had worked with the system on three to four occasions. The resource teacher experimented with the terminal on a regular basis, while the principal did not get involved. The staff's limited usage of the terminal gave rise to three issues which altered their attitudes toward the project: a dynamic leader, staff motivation (teacher rationalizations), and limited educational possibilities.

##### 4.4.1.1 Dynamic Leader

The importance of a project leader to generate enthusiasm for the program seemed critical to the successful implementation of the Telidon project. In the school, the resource teacher had the responsibility of initiating and maintaining the flow of the project. The majority of the staff recognized her performance as instituting Telidon but not as igniting their interests. A male teacher viewed the resource teacher's importance as paramount for the school.

"The role of the resource person is to introduce Telidon, set the staff up to running the Telidon [system] and showing them what is available ... and then to have the teacher and resource teacher working together to implement a program into the classroom. ... to make sure that everyone is familiar with it since she has the most access to it and the most time to offer towards the program. The resource person becomes very important."

The resource teacher realized she had the responsibility to motivate the staff in working with the system...

"My role was all important. It was key. If I had not been the catalyst it would have sat in the closet. ... I felt the responsibility to be the catalyst and to get it going."

Many staff members supported the project leader's position and viewed her as the only one capable of attending to their needs. A male teacher stated the significance of the resource teacher.

"I think that the resource person is the key person for this type of program within the school. She would be exposed to all grade levels... more than we would."

One female teacher pointed out how she viewed the resource teacher in leading the project...

"Extremely important. The resource person would be the key which all this would revolve. The person who would be aware of programs and programming in Telidon."

A couple of teachers objected to the resource teacher's position, in heading the Telidon undertaking. They felt that trained personnel should be handling and operating the system in the school.

"... We need someone with expertise in here showing us what should happen, what can happen and how to program. No one here really knows how to program, certainly we do not have the time."

Tied to the feelings of the staff toward having someone in charge, the principal described who she believed to be important in introducing the Telidon system into the school. She stated that the leadership of the school rested with her - the principal...

"Basically the responsibility for animating a school rests with the principal. I would like to have gotten the teachers more involved but the fact that it [Telidon] was only in the school as a temporary thing was one reason. We are not going to have it next year so why get started? The principals are the ones who must animate and help to determine how it is being used in the school. They are the key... if the Telidon was going to be here for a year, I would have really gotten myself plugged into it."

Confusion and conflict resulted over leadership of the Telidon project at Sacred Heart School. Who should be in charge arose as the key issue. The majority of the staff viewed the resource teacher as principle in having the system in the school. One teacher supported the principal's position as the dominant figure, while several teachers stated that the introduction of the system required the talents of someone skilled. As a result, the resource teacher assumed the role as project leader but had meagre support from staff or administration with which to adequately maintain the project. The teachers began to rationalize their lack of involvement in the program.

#### 4.4.1.2 Staff Motivation (Teacher Rationalizations)

The staff cited a number of reasons for their reluctance to experiment with the Telidon terminal. Several teachers expressed their lack of involvement because of their previous lack of preparation.

"We did not know how. There was no introduction, not a sufficient introduction. Most of us do not know how to go about using it [Telidon]."

Others said that they needed assistance and support from the resource teacher but felt inhibited in approaching her for help. One female teacher commented on her reluctance to experiment with Telidon.

"I was afraid of the technology. I felt that I needed the resource teacher there just in case something went wrong. ... It would be nice to have the resource teacher there, but I felt that I would be intruding on her lunch time if I wanted her to be with me."

A few teachers stated that because of their own poor planning, they did not find the time to schedule the terminal into their class program. Some felt that "they just could not be bothered" while a few replied "that they did not set aside time for Telidon".

"I have not had the time to give to it [Telidon], as much as I would have liked to. If it were here for a longer period of time we would become more comfortable."

Many teachers mentioned the poor quality of program material, the nonavailability of programs for their particular grade and the presence of programs which they could not use as contributing to their refusal to work with the terminal.

"There were only certain programs that would apply to my grade level and most were not applicable to my kids."

For some, the resource teacher represented an excuse for their lack of interest in Telidon. Several teachers anticipated and expected the resource teacher to get them, and their class involved in using Telidon. One senior male teacher noted that:

"The role of the resource person is to introduce Telidon, set it [Telidon] up and running for the staff and to show us what is available."

Others asserted that confusion existed in understanding the function of the resource person in the school. A female teacher who had been a resource teacher stated.

"If they [administration] want Telidon introduced into a school then they should provide trained personnel to handle it [Telidon]. It is unfair to ask the resource teacher with all her responsibilities to become knowledgeable on this too."

One teacher pointed out that the staff had encountered problems earlier in receiving other forms of instructional media. She referred to a lack of preparation by administration.

"Three years ago, we got VTRs. Those are absolutely fantastic learning instruments, yet they were put into the school with no introduction as a learning tool. ... no real time to adapt to using them [VTRs] in the classroom. This September, it was computers and we no sooner got into computers when we received Telidon. As far as I am concerned there is too much too fast!"

Half of the staff claimed that if Telidon had arrived in the fall, they would have been better equipped to interact and use the system efficiently. As one teacher who did not use the system explained ...

"If we had known about it [Telidon] coming in September, I would have had time in the summer to learn more about it and scheduled it in. That would have made a big difference."

Several more suggested that the location of the terminal would have made a difference. They mentioned that had the terminal been placed in the staff room, the system would

have received more usage. The four teachers who managed to experiment with the system felt that the arrival at any time would not have altered their involvement nor that of other staff members. They also remarked that placing the terminal in the staff room would not have made any difference. A primary teacher reflected on her usage of the terminal.

"The biggest drawback is that we did not have the time. If we would have had Telidon in September, it would take me about two months to get organized with it [Telidon] and then I would be ready to use it [Telidon]. I think having it only in the third term - but by the time we got orientated to it there really was not much time left to use it."

More importantly, one female teacher reflected on what she felt were the problems of the staff.

"We are trying to do everything that we always did plus we are trying to fit Telidon in. Telidon has to replace something, you can not worry about using that math book or whatever. You are trying to squeeze in all those textbooks and other materials that you always use plus you are trying to fit Telidon in and you just can't. You have to get rid of something. We have to make a decision in order to fit Telidon in. It is easier to stay in a rut and do the same old thing rather than change because it means more work. ... The teachers who teach year after year from the same textbooks will say that I have been doing it this way and it works fine so why should I change?"

The resource teacher responded adamantly to the teachers' lack of involvement in the project.

"You try to get people to take the initiative and if they don't, then you become a little more assertive by going out and getting their kids involved. I provided the inservice for the teachers, hopefully with the intent that they would carry on - some did, some didn't."

The principal associated the teachers' limited usage to their fears of the technology.

"There was a lack of awareness of the possibilities, maybe a bit of fear of it [Telidon] not fitting into the content of their teaching at the time. Some of the programs are not relevant as yet. I was a little disappointed that they did not get more involved... but there has to be conviction of the value of it for them to use it."

When questioned as to her own failure to use the terminal she explained by saying:

"No, I did not use it [Telidon] that much. This particular year with the crowding of things, office work and the [sic] things I had to do in the office have really prevented me. I would have liked to have had more time to get into it. If Telidon was going to be here for a year, I would have really gotten myself plugged into saying to teachers 'this would be good for grade 4 or 5 - lets get into Telidon, calling up programs'."

Several staff members referred to the technological malfunctions (poor reception) and the difficulty of getting into the data banks as 'very distracting' and not worth circumventing. Many claimed their present teaching methods adequately met the needs of students.

#### 4.4.1.3 Educational Possibilities

The teachers who tried the terminal commented on Telidon's potential as an instructional medium. They viewed Telidon as an excellent visual medium, exceptional for drill, review or group work but limited for younger children (Kindergarten through to Grade 2). A special education teacher remarked on the strength of the system.

"I found that it [Telidon] promotes good rapport with children. I see Telidon as a useful educational tool only for students who have good memory and auditory skills. Until it becomes more simplified it is going to be very difficult for some children."

Various staff members described Telidon's qualities as ranging from 'very graphic, appealing and a great visual aid' to 'very limited in programing content and too expensive'. The staff approached the issue of teacher replacement by reiterating their earlier position that such possibilities did not exist. A senior level teacher stated how he viewed the future of using Telidon.

"I do not see teachers being replaced because children need the human input. A machine will allow teachers more freedom to be able to give children a one-to-one that is so necessary."

The one staff member who anticipated being replaced reinforced her earlier position. She placed the responsibilities of using micro-computers and Telidon on administration. The onus rested with administration to decide the future of teachers. She felt that by "plugging children into terminals", the essentials of learning - reading, writing and arithmetic would be ignored.

"... in the future, yes. They are already cutting back on teachers, those that are in the ivory tower behind the desks. They already think that we can handle 'x' number of kids and give them all an equal education. I feel guilty not being able to get around to that child as much as I would like to but physically I could not."

The resource teacher considered the limitations of using Telidon in the classroom:



"No, it [Telidon] is only an extension of the blackboard and it is still very much in need of somebody walking the child through the programs. Telidon is not self-sufficient."

In reflecting on the results of the three month trial, the project leader altered her earlier beliefs, disillusioned at the quality of programs:

"... I came into the experiment with the belief that this technology was really going to be an asset to education. I was disappointed with the fact that the educational sequences are not very good pedagogically. The potential is there. Once they get teachers who are programmers or programmers who are teachers then it will work. Once programs are made to meet specific needs and to fit in with curriculum guidelines from the Ministry, I can really see it [Telidon] being used much more to an advantage."

The final interview period underlined the staff's position toward the Telidon system. Gross and his colleagues emphasized that in order to aid teacher acceptance of an innovation, the staff must be willing to set aside time and have the desire to learn the technology. They also stressed the need for program material to accompany the innovation. The staff at Sacred Heart could not effectively use the system. Their limited involvement stemmed from several reasons. The programs lacked the quality the staff needed to use in their classroom. The teachers appeared unwilling to stay after school or to arrive early to experiment with the terminal. These problems coupled with their initial concerns made it difficult for the staff at Sacred Heart to apply the Telidon system.

In summarizing the events which occurred at Sacred Heart, five factors appeared to impede the success of the project. The first four factors existed at the outset of the program, while the need for a leader developed shortly thereafter and continued throughout the three month project.

## Chapter V

### DISCUSSION

This case study attempted to explore the characteristics which affected the introduction of a technological innovation - Telidon in Sacred Heart Separate school in Windsor. An attempt was made to study the attitudes of the staff towards the Interactive Computer system. Qualitative analysis served to uncover the staff's reactions to and comments on the technology.

In this chapter, the methodological limitations of the study will be discussed first. An evaluation of the findings in relation to the theories on adoption will follow. Finally, suggestions for further research will be examined.

#### 5.1 METHODOLOGICAL LIMITATIONS

##### 5.1.1 Criterion Measures

The short notice of the project prevented the development of a concise questionnaire. Some of the questions covered the issues related to the technology while many more could have been expanded and added to center on the staff's attitudes toward the innovation. The personal observation measures attempted to note the staff's usage and reactions to the terminal. Several questions could have been incorporated to examine the students responses to the system.

### 5.1.2 Design Limitations

This study is subject to the limitations imposed by quantitative analysis - intensive interviewing and personal observations. To strengthen the understanding of the staff's attitudes toward the Telidon system, the research would have been best served by incorporating some attitude measures and sociometric distancing methods to augment the qualitative procedures.

Finally, it appeared beyond the scope of this study to have focused on the student's and administration's (staff at the Teacher Center) attitudes to the innovation. Incorporating these two groups could have provided some insight into understanding the student and the administrative role in the innovative process.

### 5.2 SUMMARY

The failure of the Telidon project appeared attributable to five obstacles encountered by the staff at Sacred Heart: 1) the lack of knowledge and information in preparing for the technology; 2) the fear of the technology and of replacement; 3) the limited educational possibilities; 4) the lack of time and effort - minimal staff involvement; and 5) the lack of a dynamic and enthusiastic leader. The outcome of the project resulted in administration's misperceptions of the importance and concern in planning and preparing the staff for the arrival of the technology.

The Head Consultant at the Teacher Center welcomed the opportunity to field test the Telidon system in Sacred Heart school. She anticipated that the staff would share the same eagerness and enthusiasm in experimenting with the technology as she had in selecting their school. She assumed that the technology alone would carry the project successfully without the help or direction of anyone. The staff at the school appeared to be adjusting to the PETs and other instructional media in the school. To suddenly plan and use the Telidon system seemed as another additional burden.

Evidence in the literature credited the significance of formal leaders as having a major effect on the utilization of new ideas. Daniel (1977) had demonstrated this need with respect to the teleconferencing of educational programs to northern Canadian communities. Carlson (1965) had also pointed out the importance of a leader in relation to school system superintendents. Rogers and Shoemaker (1971) suggested that there had to be an enthusiastic individual to act as a funnel through which the information became available to the users. Gross and his colleagues (1971) indicated that administration's function was to facilitate or support the users in understanding and learning the new or proposed method or program.

Rogers and Shoemaker (1971) and Gross and others (1971) did not consider the individual or the staff attitudes toward a temporary innovation. Both researchers based their

concepts of receptivity on a permanent innovation. The staff at Sacred Heart accepted Telidon as a temporary educational medium. Part of their reluctance stemmed from their understanding that the system would not be there in the fall. This too, affected how they viewed the Telidon project.

### 5.2.1 Postscript

In late August, the resource teacher informed the researcher that the Head Consultant at the Board Office had purchased a Telidon system for the school. The resource teacher explained that she had been asked if she felt the school could benefit by obtaining a terminal. Although she knew the system lacked the software capabilities required to meet the staff's classroom needs, she felt that the technology's future appeared as its greatest potential. The resource teacher appeared to be the only person contacted in the acquisition of the terminal. Neither the principal nor the staff seemed to have been approached in the decision to purchase the technology.

### 5.2.2 Conclusion

In the present study, I have tried to examine the characteristics influencing the receptivity of Telidon at Sacred Heart Separate school in Windsor. The data from the interviewing periods and the personal observations confirmed the

teachers' trepidation toward the proposed change. The results offered some support for the individual decision making process and the staff as an organization. More importantly, I attempted to explore the factors affecting the introduction of a temporary innovation. Both theorists looked at the attitudes of individuals and of an organization towards a permanent innovation. Conclusive support would require replicating the findings observed in Sacred Heart school.

### 5.2.3 Implications

Further research efforts might be best directed toward applying the Research, Development and Diffusion model (Guba and Clark, 1965; cited by Havelock, 1969) as a strategy for reducing resistance by teachers toward a new or proposed idea: 1) increasing the communication between administration and staff members; and 2) incorporating the users of the technology into the planning, developing and decision making process. Additional research studies could expand the knowledge of the process of adoption by staff members and students in a school environment toward a temporary innovation.

Appendix A

INITIAL QUESTIONNAIRE

Some of the questions located in the Appendices (A, B, C) did not appear as part of the results because they did not conform to the theoretical frame being studied.

A.1 INITIAL INTERVIEW SCHEDULE (MARCH 31, 1982 = APRIL 16, 1982)

I would like to get some background information for my coding purposes. The research information that I am collecting will be in strict confidence. No one will have access to your interview but myself and my advisors. What is your name? How old are you? What grade level and subjects do you teach? How long have you been teaching? Today's date.

1. Do you mind if we tape this interview?
2. How did you feel when you first heard that Telidon was coming into Sacred Heart? What do you think about Telidon as an educational tool (instructional medium)?
3. Have you had any experience with computers? If yes, what kind of experience? Would you be interested in learning more about the system of Telidon? What effect do you think Telidon will have on students? Why? (Probe)



4. Do you feel that you have sufficient understanding about Telidon to use the system? Are you worried about handling Telidon in anyway?
5. Do you see Telidon as entertainment? Will experiences with computers and video-games influence how students see Telidon? Why?
6. Have you had an opportunity to use computers and video-games?
7. Do you think some teachers will have a difficult time in using Telidon? Are some more prepared to use Telidon than you? If yes, who?
8. Do you think Telidon will allow you to spend more time with some students? If yes, which? If no, why not? What kind of students do you think Telidon will benefit most? Why?
9. Do you think society is more or less visually oriented? Does the use of visual aids in school affect learning? Do you see Telidon as being this way? How do you think this new development will influence teaching? Why?
10. Are there things you can do as a teacher that Telidon can't do? How about the other way around, are there things that Telidon can do that you can't do?
11. Does Telidon threaten some teacher's roles? How about you(rs)?

12. If you were in charge of introducing Telidon, how would you do it?
13. Do you see teachers being displaced or replaced by technology? How about yourself?
14. Do most of the teachers use audiovisuals, films, projectors, overheads, in their classes presently? How about you?
15. You are the first in doing this project in our city, how do you feel about that? Why?
16. Who has helped you the most in understanding the system of Telidon? Computers? If yes, who? Have you been given enough information? If yes, by whom?
17. Are there any comments that you would like to make about Telidon that I may have overlooked?

Can I take a moment to check to see if I have covered all the questions? This has been a rewarding interview, and I thank you for the opportunity to speak with you.

Appendix B

PERSONAL OBSERVATIONS

B.1 OBSERVATION PERIOD (MAY 25, 1982 - JUNE 11, 1982)


The observations were conducted from Monday to Friday beginning at 9:00am - 3:00pm.

1. Today's Date.
2. Time.
3. The Teacher in charge.
4. What is the Teacher involved doing?
5. The lesson material and program used.
6. The grade level using the terminal.
7. The size of the class.
8. The teacher's usage of the terminal.
9. Did the teacher preview the sequences?
10. What are the students' reactions?

Appendix C

FINAL QUESTIONNAIRE

C.1 FINAL INTERVIEW SCHEDULE (JUNE 21, 1982 = JUNE 28, 1982)

1. How many times did you use the Telidon terminal personally and in front of the class?
2. Did you preview any of the materials in the Vista/Ottawa data banks at lunch time or after school?
3. Since you have had an opportunity to use Telidon, how do you see Telidon as an educational tool?
4. From your involvement with the Telidon terminal, what size of class benefits the most? I noticed that approximately 6-8 students seemed to have the most success. What do you think? Why? Do the younger children have more or less success than the older children?
5.  You feel qualified to introduce Telidon into a school? Why not?
6. Why did you not use Telidon more?
7. Do you see teachers being replaced or displaced by technology? If yes, how? If no, why not?
8. Would Telidon have been better received if it had arrived in the fall?

9. How important is the role of the resource teacher in using Telidon? Is this an important role? Is she the expert?
10. How important is the resource teacher in developing this type of system within the school?
11. Do you think that this Telidon project could have been done without the help of a resource teacher? Would you have gotten more or less involved?
12. Do you see the resource teacher's role as being important in this as a future development? What do you think will be his/her responsibilities?
13. How did you feel when the resource teacher took over your class? Some have said that this creates role conflict between teachers? How do you feel about that?
14. What did you do with the time when the resource teacher was in front of the class using Telidon?
15. Do you think that the resource person should be a teacher or a technical person? What qualifications do you think are necessary for the resource person in developing Telidon within a school.
16. Some have said that the resource person should be programing the materials and evaluating the content that can be found in the data bank? How do you feel about that?

17. Do you think that previewing and programing will be a vital part in informing teachers in using Telidon?  
How will Telidon fit into the classroom scheduling?
18. Do you see the role of the resource teacher becoming critical or changing to one of an information person in the future?
19. Are there any comments that you would like to make about your experiences with Telidon?

Thank you for your time in allowing me to conduct my re-  
search.

Appendix D

INTERVIEWEE RESPONSE 1

Three staff members' comments on the Telidon system prior to the introduction in the school appear below. These three respondents' interviews coincide with the ones found in Appendix E.

D.0.1 Female Staff Member

D.0.1.1 answer 3

I did not feel anything because I was not familiar with it. I did not know what Telidon was or what it meant, so it was a neutral reaction, just only wondering what it was. The possibilities are great. I do not see a whole lot of use for it at this time with the programing that they have, but with more programs it would be excellent to use.

D.0.1.2 answer 4

Just in the school. Definitely. I think that very much depends on how it is used by the individual teacher or how its uses are conceived within the school system in general. If it is going to be used or conceived by individuals as a way of circumventing (some) teaching, then its use is very negative. If it is used to supplement, then its use is very positive.

sitive and is moving in the right direction. I hope that it is not going to be left to the individual teacher.

D.0.1.3 answer 5

Not at this point right now. No, I would need help to use it. No. No.

D.0.1.4 answer 6

I see it as a danger in that it could be used solely for entertainment purposes the way that I see the computers being used much more to entertain than I think is healthy in a school situation. Yes, it will. Students at this stage (this is the first year for computers and I am speaking of my experiences with the students in my own class) when you say computer, they translate 'games', they do not translate 'educational tools'. The programs are limited. When you get to the intermediate level, there is a fair amount of stuff for primary grades and even into the junior grades but when you get into the intermediate, that is the last hit, the kids are no longer content to play tic-tac math with two-digit addition. They are beyond that. You would have to get into the realm of integers and things like that, and those are just not out, so they play space invaders instead. Yes, I built in the use of the computers into my language arts program this year. (The kids enjoy that.) They do not use the video during that time - they do that on their own



time. The main point of building it into the language arts was to familiarize them with the computers and I hope by the end of the year, or next, they would be able to program spelling, and math games suitable for themselves and others.

D.0.1.5 answer 7

Yes, I am sure there will be. It is very much an attitudinal thing. There will be those who will not use it as there are those who do not use the computers, VTRs, or those who do not use visual aids of any kind. I think that (as with) anything that is new, there will always be a faction which believes that new is dangerous - (my job will go out the window with the computer). Those are the types of people that will not use it. But it is an attitudinal problem more than a problem with technology.

D.0.1.6 answer 12

No, I hope that some facets of the job can be replaced by technology, some of the things that we have to do - that deal very little with education. To replace the teacher as such, I do not see how it could. The child has to learn how to read in order to understand the computer, also to master numbers in order to function. It will enhance what we can do a great deal, by making knowledge available to students on a much faster rate than any of us can impart. Individual students (gifted ones) will be able to progress more quickly

and not be held back by the slower ones. I would incorporate it as much as I possibly could into my program.

D.0.1.7 answer 9

Yes, society is becoming more visually oriented. Yes, it reinforces. You can for example, say take Geography, it is one thing to describe a volcano, but it is another thing to show a picture to reinforce the description. So it reinforces. I do not think the visual aids alone are very helpful, but visual aids combined with an explanation are certainly superior to the explanation itself. Yes, if it is properly used. If it is used to broaden the students knowledge, to supplement the points you are trying to make, even for some individual children, that can be the teaching tool. I think that that is one of the things we have to realize. When you speak of gifted children, these children learn in spite of anything that you do and these are the children with minimum input can learn the bulk of their knowledge from a computer.

D.0.1.8 answer 8

I would see that as a goal to be reached. To spend more time with the students who probably need more remedial work, the students who are having the greatest difficulty. The slow student will not learn.

D.0.1.9 answer 9

If properly used Telidon will enhance learning, unless it were brought in, set up in the classroom and just let go, then I would see that as being detrimental. If it were properly used, I can not help but see Telidon as enhancing student learning. It may mean a massive kind of re-organization of the structure of education today in allowing children freedom to explore with the computers, allowing students to have greater access to knowledge than other children - I should not use the term allow - but there are those children who will find greater access because they have more time - specifically gifted children - where the others will take longer to assimilate small portions of material. We may have to retrain ourselves to think in a different way.

D.0.1.10 answer 11

Carefully! - because of the faction of people who are threatened and if those individuals in a school or a school system are powerful enough individuals, then they could uproot everything that you are trying to do. So it would have to be done very carefully, and geared to convince the most reluctant individual that it really is an effective educational instrument. Before I would plunk it down in a school (the way it hapened here), I would have a great deal of in-service work for teachers. That is what I find most

lacking, that all of this equipment is placed in the school and you are supposed to use it now - how you are supposed to get the information? I am not sure now whether you should be struck by lightning or what, but there has been thousands of dollars spent on equipment and we are not trained on how to use it adequately.

D.0.1.11 answer 15

The only understanding I have is from the man from the Ministry - Alan Orr. That has been it - my only acquaintance with Telidon. No, nowhere near enough information. I would not even know how to turn it on.

D.0.1.12 answer 13

I would say teachers do. Yes, oh, yes, very much! It is a very large part. Never a week goes by without some audio-visual use in my classroom.

D.0.1.13 answer 14

Technically, no! - because we do not have the expertise. There has to be technicians out there to teach us what to do and how to use them. As far as influencing future generations, yes, they have to. I feel hampered because Telidon is here and the potential is great. It will be gone and we will all wonder why, and what has been the point in making it available to us. There is some resentment about the in-

fringement on the privacy of what we are doing in our classrooms and in our schools, which has created many interruptions which are no big deal - but are there. I see it as a real privilege if I knew how to use it, but I am afraid that most of its time will be spent sitting there doing nothing. The only banner we can wave is that it is at Sacred Heart Separate School.

D.O.1.14 answer 10

Yes! How good are the kids. Pat them on the back - any kind of positive reinforcement that children need so much. It is one thing to see congratulations printed on the screen and it is another thing to actually touch the child and pat him on the head. The one-to-one interpersonal contact is far more important in teaching than the curriculum and content that you try to get across. The computer can take care of that, but not the interpersonal skills. Yes, it can draw! It makes a nice map! The volumes of information - I can not impart that amount of information - there is no way! Some children can understand more than I can impart - the gifted children can benefit with the amount of knowledge and the repetitiveness that can be imparted..., also the variety of material is endless. I'm sure there are those who feel threatened by the presence of a computer, by the presence of some machine which can impart all sorts of information and would be superior to any human mind. It is an individual

thing, if you are confident in your role as a teacher, then you can understand what it is and why it is, you probably don't feel threatened. It is those people who are teetering on the brink, wondering what they are doing here who are probably most inclined to feel threatened by a computer. No, it does not!

D.0.1.15 answer 16

I hope that there would be more than one of them in the school when the time comes to use them. The advent of Telidon now has rendered the use of the computers obsolete. It is so much more superior to computers and that is kind of frightening. You get these in September and Telidon in January, and already what you had six months previous, seems very insignificant.

Appendix E

INTERVIEWEE RESPONSE 2

E.0.2 Female Staff Member

E.0.2.1 answer 3

I was excited about it because we budgeted for computers. My knowledge of Telidon was limited but I felt that I knew enough that it stored information that you could get and that it would be a worthwhile thing that would be an economical way to gain information. I see it as an extension of the computer-education, which we have introduced and which enriches the materials that we have available for computers. They (the students) can call on other information which we don't have from a central bank which is a rich opportunity for this school - to have access to that computer.

E.0.2.2 answer 4

Very limited. Yes, I think it should create a lot of inquiry - to give the students an inquiring mind. It should help students to develop creativity because some are attempting to program (they would love to put this on computer tape), and now we can make our own programs which is great! I love to see children saying how and why! I find it difficult to separate Telidon from computers. I only see Telidon as an

extension of what we can do with computers! It has the visuals, and the technical (dimensions) that children love to manipulate. They are fascinated with the computer when their names appear - which is a very human thing. That brings in the human dimension. We can go way off and draw material from the central bank that could have been created anywhere in Canada. It gives us a global picture of what our country is doing.

E.0.2.3 answer 5

No, I am not worried. I am interested in it. If I were in a classroom, I would be using it a great deal. My biggest concern, is if I were asked to invest in Telidon. How is the staff going to react to it? How interested are they going to be? Will they feel that, if they go to Telidon, are they neglecting the basics of learning by not covering a textbook - which I do not see as being that important. This is a problem now. The teachers are afraid of it. Students are turned on to it. Teachers are saying, "I haven't time to do this because I have to teach this and I am going to be short of time if I haven't gone through my four readers and I haven't gone to the end of my math book." I see learning not as a measure of the amount of knowledge students learn, but as the ability to know where to find information. I see Telidon as being an excellent means of gaining this information.



**E.0.2.4 answer 5**

Yes, it could be. I do not know how much information is available from the data bank. I do not see it as having much entertainment value.

**E.0.2.5 answer 6**

I think it may be similar. But, I think that when students are looking for information, they use Telidon. My knowledge of it is so limited, that I am not sure. If I felt that there was a serious danger of it going just into entertainment and games, then I would not think that it would be worthwhile in the first place. It would be too expensive. Some. When the computers came into the school, my intentions were to get in there and use them but, because I am not dealing with teaching, it would be a passtime<sup>15</sup> for me. I do rely on the expertise of the resource teacher because I know she has a lot of information in that area. My time is spent with parent interviews, administrative functions, students, etc.

**E.0.2.6 answer 7**

Yes, Some will have a difficult time being converted to the value of it. The conscientious teachers . . . may be afraid that it is a frill, that students are going to be deprived in some way and that they are going to be short-changed because they are not going to get fundamentals.

Some are going to have difficulty even getting motivated to use it. Yes. My resource teacher has the students involved with computers, the information that she has gleaned from computers is going to really motivate her to get into Telidon. They are better qualified because they are closed to it. They are interested in getting all the facets of the learning that they can get. I have too many administrative things which prevent me from getting into the basic, really core part of it.

E.O.2.7 answer 8

Yes, I can see a teacher looking at a program, evaluating it, and letting the class work and (the teacher) being able to work with an individual student in the corner of the classroom while the rest of the class are tuned into it (Telidon). She would have to be very selective in her programs - the computer would lend itself more to that than Telidon. The two are so inter-related that I am not sure I have the right aspect of it. The teachers can find time to get the students into Telidon and work with other students quietly. The ones that are highly distractable, the ones who have problems with memory retention, that have a lot of difficulty reading. ... There are really two types - the slow student who needs the mechanical thing going and the gifted student who would gain a great deal. The gifted child who could get bored with the routines of the classroom

and go to Telidon and call a program and get a lot of enrichment in a very short time.

E.O.2.8 answer 9

Yes, it can aid learning. It can take from listening skills. When things are always visual one tends not to concentrate on the audio, I think both are needed. If we keep constantly using visual, constantly using our eyes, and not depending on our hearing what is going to happen if our eyes wear out? Listening is going to suffer. If could be. I do not know if it could be possible - to have a Telidon program that was non-visual, or a Telidon program to help develop listening. The technology of the system attracts students. There is a time when nothing should be in front of us - a time to be still - a time to use the mind. I fear it could become too visual! Is listening going on if there is nothing to see? Students do not listen. It is giving us a one-sided development. The teacher's role will change. We will be getting away from the lecture type. We will have to have teachers who can be perceptive of student needs - tell them where to go to get information and help them to search out information. The person in the classroom will necessarily become more an educator and less a teacher. When I say a teacher, I mean someone who is more in knowledge - telling you what, telling you how. The educator helps you become more self-sufficient. Teachers will always be needed, their

roles will change and they will have to become dispensable so that the student can become an independent learner. That strength is in Telidon.

E.0.2.9 answer 10

Telidon cannot relate to the student on a one-to-one basis in a human way. We will always need the human touch. We become so caught up with the technology that we lose the humanness and the computer controlling us - I see both as tools. The instant recall of information which is impossible for the human mind. Yes, it could. If the teacher is not aware of his real purpose of being in the classroom and the fear that I will be replaced by a Telidon - someone has to direct that Telidon. It will be the educator who will effectively use Telidon.

E.0.2.10 answer 11

I would want to have the staff exposed to it, then give them the opportunity to see the value and to know what can be done. Then I would want a lot of in-service because no one wants to be made a fool if the teacher does not know how to operate it and the whole thing falls apart in front of the class and the class falls apart. Teacher inservice is very key if it is being introduced. Have the opportunity for people to work with it prior to the introduction to the students and know what you are going to do with it. The teach-

er would have to know the possibilities of Telidon, the operation of the machinery, and how it fits into their curriculum.

E.0.2.11 answer 12

I see role changes, more than displacement. Because of our society, we are going to need more people on a one-to-one basis. I see the teacher more in the counselling role, more in the directing role. If teachers are not willing to change with the needs of the times, then there will be displacement. My role is to keep alerted to what is available on Telidon and what the teachers are doing - being a facilitator in looking at programs and making sure the teachers have checked with the resource teachers to see what is available. Also, my role is to make the teachers sensitive to the students who would gain more from Telidon than sitting in a classroom. I see my role as facilitator! As a non-teaching principal I could see where the needs could be met.

E.0.2.12 answer 14

Yes. They have access and they use them. I think we should be in touch with technology and consulted in what our needs are. We do not have enough technological experience. But, yes, a teacher, an educator who does not know the needs of a student is going to have difficulty. The teachers have to be alert to the possibilities and weaknesses of technology. Maybe an evaluator rather than a leader.

**E.0.2.13 answer 15**

I am pleased that the student, staff, school, and community have this opportunity. I see it as a great plus for the education of the students.

**E.0.2.14 answer 16**

Sandy Rinehart. No, I don't think so, I would have liked to have had a lot more before it came in.

**E.0.2.15 answer 17.**

We did not touch on the materials available. I am not sure how vast the data banks are. I would like to see some research on how fast these materials are coming out, the authenticity, the measurement of the truth of what is on Teli-don. I see this as one of the weaknesses. Programs could be there that are totally contrary to the beliefs of Canadian culture, which could provide infiltration of our society. I believe that there is very little screening of materials and of what goes through. My question is: what controls are there on the information and programs that are produced? I may not be accurate about that, but I see this as a problem. Materials have to be reviewed.

Appendix F

INTERVIEWEE RESPONSE 3

F.0.3 Female Staff Member

F.0.3.1 answer 3

Excited, anxious, eager and nervous. I think that it has great potential and because the potential is unlimited, the imagination is the only thing which stifles it. As far as being an educational tool, right now, I question its use. The software and the programing that is available educationally is not that terrific - it has been done by technicians rather than teachers. I think that it has to have the two together to be effective. There are a lot of bugs in the system which causes it to be less effective at this point but its potential is great.

F.0.3.2 answer 4

Yes,, I would. Yes,, a limited amount of experience with microcomputers.

F.0.3.3 answer 6

Yes, I have played with the games here and I have made some of my own. Hopefully it will because of the computer technology that is now prevalent and what is going to become a

part of their whole life. It helps them to appreciate the system - the knowledge that is involved in Telldon. Yes, it certainly is an entertainment source - because of its pictures - no matter what is on the screen it's entertaining. There are games on the system which are entertaining. The system itself is fun and entertaining.

F.0.3.4 answer 9

Yes, definitely. Ninety percent of what we learn is through our eyes, so this sort of system - the Telldon system is geared to the visual and the auditory - isn't yet but it will be in the future.

F.0.3.5 answer 5

I have a working knowledge of it which equips me to make it function. There is a real need for me to learn its full potential and capabilities. The technology is changing so rapidly that it needs constant updating but yes I have a working knowledge of it. It threatens me in the sense that, I want to know more so that I can give more in terms of teaching but I do not know how to gain that information.

F.0.3.6 answer 7

Yes, because they are afraid of the new technology - so they will have trouble because they do not know how to use it pedagogically. They are saying "how do I use a program as a



tool?" They will have difficulty in terms of scheduling because of the demands of the other curriculum and working with it because of the mechanical breakdowns of the system. "I want to use it now - but it is not going to function therefore, it means another lesson." I can see one or two skirting around have to get involved, dumping on me - "will you do it with my kids?", rather than get involved themselves. I think that they all would like to get involved with it just like how they would all like to get involved with the PETs but until they are dragged into it, if I am not the aggressor they will sit back and not be a part of it. There will be those who will skirt it if they can; and those who say I want my kids to know it so you do it; and there will be those who jump right in and say that they want to do it themselves with their kids.

F.0.3.7 answer 5

I am worried about what I don't know. The mechanical breakdown - I don't know how to fix it. That frightens me a bit. The fear of not knowing enough to satisfy needs is frightening when the teachers ask me questions and I don't know how to answer them. I am not afraid to say that I don't know but it is a fear that I would like to know how so that I can give it to them if I can. The kids don't frighten me in giving them answers. It is very difficult to work with your peers. You do not want to come across as being an expert

but rather just somebody who is learning along with them and it is frightening when you feel that they think that you are an expert and you are lording it over them. You are really not trying to do that but rather trying to learn along with them. The system would not be in the school for me not being here - I think - they all know that and yet I am trying not to come across as a heavy - but someone who is at the same level as they are.

F.0.3.8 answer 7

No.

F.0.3.9 answer 9

Definitely - visual is an asset.

F.0.3.10 answer 13

Yes, - some more than others - but we are geared to using films, overheads and pictures but not TV too much or any of the other visuals. Yes, I tend to use as much audio-visual as I can to teach and help out in classes. I think it has the potential as long as the system works - good programming is made but it certainly has the graphic potential - so it just needs the perfection.

F.0.3.11 answer 9

Right now it will not have a great impact on education because the programing is not great. But once the programing improves because the technology - improves and the costs come down and schools start purchasing them - then it will become quite useful as an audio-visual means. The mechanics will become simple and less threatening for a student or teacher to use. I can really see it as a useful tool for research - for information of any kind, for games - the capabilities are endless.

F.0.3.12 answer 8

It certainly should - if students can be working and accessing information then it should do it. I do not know. It will effect everyone. It depends on the need - if the need is remediation; it's there, if you need enrichment; it's there, if you want reinforcement; it's there - I do not think that it will cater to one specific type of child.

F.0.3.13 answer 10

Yes, it allows for the personal touch that you can not have with a machine. It allows for immediate feedback and validation or reinforcement which the machine can not give. It allows for a diversion of the system that the machine can not give. Certainly, because of its potential for data retention. It can gain access to limitless amountless amounts of information which I have not got at my fingertips. Its

ability for drawing and graphics are superb. No, it still demands someone to manipulate it and use it effectively so it is not threatening at all.

F.0.3.14 answer 12

No, they will be facilitator of the equipment. They will never be replaced by it.

F.0.3.15 answer 14

Scary because you want to say that you have done an effective job with it and you have no other experience to base it on. So whatever happens is new and challenging - exciting and certainly is enriching. I feel privileged in doing it.

F.0.3.16 answer 11

I would have to make sure that the equipment worked and that I had a back up system. Often you can not get on the system when you want to, so it would be important to have a set of slides to explain the system if the system does not work. A very simplistic explanation for those who have not had any exposure to it, also the videotape by the National Film Board. I would try to have as many people work on the system as possible, that's why I would like to have as small a group as possible for a session. If the group is too large they can not interact with it and therefore do not get a full perspective of it. It is important to know the pro-

grams to call up - a sequence of steps to call up geared to the needs of the audience you are using it for.

**F.0.3.17 answer 15**

It has not been just one person but a system(sic) of people - extending from the TV Ontario representative - David Sutherland. It basically has been self knowledge. I would like more - the only way to learn is through first hand knowledge - I would like more.

**F.0.3.18 answer 16**

My appreciation for the system is growing. I think it is a part of technology which is becoming prevalent in our society. I hope that everyone I work with will have an appreciation of its potential. It is available and the interest is there being generated. It is exciting.

Appendix G

INTERVIEWEE RESPONSE 1

The same selected interviewees comprise this section. Their attitudes appear in response to their experiences with the terminal.

G.0.4 Female Staff Member <sup>A</sup> June 24, 1982

G.0.4.1 answer 1

I used it once in front of the class. Not personally at all.

G.0.4.2 answer 2

At the beginning I did. I previewed the index and some of the programs I thought might apply to my class. I just took a brief look at what they were. I think that it has a lot of possibilities. What I see in the programing right now is very limited.

G.0.4.3 answer 5

No. I just do not know enough about it. I did not find the programs that were there applicable to my kids.

G.0.4.4 answer 4

Small groups, probably depending on the program. I would say not more than about 10 students maximum using it at one time.

G.O.4.5 answer 6

No. The machines are fine but they don't - there is not the ability to communicate one on one with the students in a personal kind of way, to be sensitive to what they need or don't need. They first of all have to be able to read, so somebody has to have taught them that before being able to use the machine. All of that has to precede the use of Telidon. I do not think so. The biggest drawback is that we have not had the time. I think that which would have been a great(sic) idea would be to have "consultants" or any "group of people" if they had someone come in and take over the classes so that we as teachers could have spent a day learning about it and going through some programs. Using one of our professional days for example, because we have had no inservice with it. Trying to get people after school like the day we had it, I had a doctor's appointment and missed the whole thing. Anytime it is after school you are going to hit that - teachers taking classes and things like that.

G.O.4.6 answer 7

I am not sure that I do. I think that what is going to happen in schools is that you have a resource teacher but you

also need a computer teacher, or a technician or another person who will man the computers and Telidon. Someone whose full capacity is doing that and who is trained in that because as teachers we are not, we are playing with them. We need someone with expertise in here showing us what should happen, what can happen, how to program. No one here knows really how to program, certainly we do not have the time. I think that that is a position that needs to be filled in the schools.

G.0.4.7 answer 12

I think that it has to become a combined effort, the resource person should be familiar with the resources which is Telidon, computer or whatever, and know what is available. Tell the classroom teacher what is available, and the third person is the one who operates it and says 'Here is what you can do with it and how you can do it'.

G.0.4.8 answer 8

Right now, the resource person is the only contact person we have. So he or she is vital.

G.0.4.9 answer 9

No, not unless they have somebody who knew how to run it, come in and tell us or else it would have just sat there. It was in the staff room, quite possibly, you may have had



people use it at lunch time. I am not sure that it would have been that much more effective. Maybe people would have been less apt to use it, because there would be all kinds of other things going on that would distract from that.

G.0.4.10 answer 10

I do not really think that the resource teacher is necessarily the teacher to handle Telidon or the computers. I really think that there should be another person. I do not know how many resource teachers are as qualified as Sandy or have that expertise. I think that it is a whole specialized area that has to come in.

G.0.4.11 answer 12

No, personally, I don't see that as a problem at all. Where there is somebody more qualified than I am to do what needs to be done in the class then I think that they should be doing it. I would not have been able to do what Sandy did with the kids, there is no question in my mind as that is the way it should have been.

G.0.4.12 answer 14

I stayed and watched with the kids to see what it was and how they responded and how the program was.

**G.0.4.13 answer 15**

No. I do not at all. I can not envision that working with the school systems and curriculum that we have now. They did not know how. There was no introduction, not sufficient introduction. Most of us do not know how to go about using it. Yes, also change is a problem. Three years ago we got VTR's, now those are great, absolutely fantastic, learning instruments. Yet they were put into the school with, see here again, no introduction as a learning tool, no real time to really adapt to using VIR's in the classroom. This September it was computers and we no sooner got into the computers when we received Telidon. As far as I am concerned there is too much too fast.

**G.0.4.14 answer 16**

Ideally it would be a combination, somebody who would be a technician but who would know the resources. If I had to choose one or the other I would probably choose a technician and the onus would be on the teachers to familiarize themselves with the programs and the resources. They would have to know how to use it. To know what can happen and how to remedy it on a short term basis - things that we do not have the expertise on. They would have to be familiar with the programs and how to draw on them and how they can be used.

**G.O.4.15 answer 17**

That's fine, but the burden of that rests with the classroom teacher. It is the classroom teacher who develops the curriculum from the basic guides put out by the Ministry. So the onus is on us to develop that curriculum and to know where we are going to begin and what the ultimate goal is. The resource teacher could not possibly do that even in a school this size. So I think that the individual teacher has to be familiar. Unless you preview it and you know what you are going to do with it, then leave it alone because it is not a teaching tool.

**G.O.4.16 answer 18**

I think that it has to be or otherwise it goes the route of how a lot of films. It is a time filler. You do not know what to do with your kids, so you put on a movie projector, or you bring them down and use Telidon. That is not education. If you are using the film or Telidon as a part of what you are doing either the introduction, or part of the presentation of the lesson or part of the review, that is fine but just to show it, what value does it have? Well, that will be the same problem as if you have one Telidon per school. I think that it will follow the same pattern as VTR's or movies. You get those who use them a great deal, you get those who see them used a great deal as a time filler and those who feel they will never get a shot at it so

what the hell - then never use it. We are talking about professionalism or the lack of it. Who judges what it is? It is the role of the principal to judge over usage. If Telidon can be turned on from 9:00 until 4:30 everyday then why are we here? Why?? no usage?? There was no time! No introduction to it. It was great having it in the school but realistically speaking, I do not think any of the teachers are going to miss it when it is out of the school and that's too bad! I won't miss it - we did not have the opportunity to make the best use of it that could have been made.

G.O.4.17 answer 19

A great tool for resources, instant information, it does away with the space of volumes of books which can be replaced by one small machine and yet the same kind of information is available. It has infinite possibilities. I hope that it does not replace some of the things we have taught the kids - the research skills required that I think they need in spite of Telidon. There are ways of getting information without dialing a number and getting the information on your TV screen - but as reinforcement, it is good. I am still not convinced that the resource person is the best one to handle Telidon. It should not be in the resource center. Maybe there should be a resource room in a school and a computer room in a school with a computer teacher. Two sepa-

rate people with two separate areas. They should know what is available in both areas and some expertise in both areas. Two people are needed.

G.0.4.18 answer 20

I have not had a lot of experience with it but what I have seen is excellent. I think that it would be great to have it in the school but I think that to put it in and expect teachers to make the best use of it without maybe a full year of some kind of intensive training or inservice is grossly unfair. I do not know what it is all about so how can I tell my kids about it? The board has offered workshops that you take on your own time. I do not have time to be taking these fancy little courses at the board office so what do I do? If the board pressures the Universities to have built into Master's programs why not have courses in computers because certainly what we are taking has nothing to do with education.

Appendix H

INTERVIEWEE RESPONSE 2

H.0.5 Female staff member - June 23, 1982

H.0.5.1 answer 2

I see Telidon as an opportunity for the teachers to plug into the programs that are in the central office in Toronto or Ottawa. It gives a general perspective to the total education picture across the country. I would hope that the variety of tapes and the content of subjects develops. The fact that you can call and recall, that you can call and look at a tape and call it back when you want is a great asset.

H.0.5.2 answer 5

There was a lack of awareness of the possibilities. Maybe a bit of fear of it not fitting into the content of their teaching at the time and some of the programs are not relevant as yet. I was a little disappointed that they did not get more involved, but I do not believe that relearning is going to take place in a child unless the teacher is convinced of what he or she is doing. I felt that it would not be wise not to say to teachers that "you must get your students down there". It has to come from within - there has

to be conviction of the value of it. I think that it will grow as programs are improved. Teachers are aware of the needs of children and they may feel that it is something much more personal than the child needs - the one to one teaching.

H.0.5.3 answer 6

No. I do not think that you could ever replace a person. It will be a help. It is a tool but a tool can not work by itself unless you have very skilled professionals designing the programs. The programs will never become good enough to eliminate the use of teachers. Technology frightens people.

H.0.5.4. answer 7

I see the resource teacher in using Telidon as the same in using printed materials in being aware of what is available, knowledgeable about the material and interpreting it to the teachers. The person should be aware of what the teachers are doing. The person does not have to be the expert in the use of Telidon, but should be the knowledgeable person about the materials available from Telidon. The classroom teacher could be more expert than the resource teacher. I would hope that the classroom teacher would see their roles in that way and not rely on the resource teacher. Our resource teacher is extremely proficient in this area and I think that the staff may let her do it feeling that she can do it.

much better than they can. The resource teacher should get the teachers involved if she can. Everything new is a challenge, people are afraid of the new, thinking that it is novel and that it is not a sound program. People who do not have access to it think that it another band wagon of novel toys that teachers will use and that will be stuffed in a cupboard in another two years time. There is a little cynicism by people of not being aware of the advances of technology and how that can affect learning. I can see the same parallels between now and twenty-five years ago. Teachers would have been frightened of xerox machines and the sophisticated duplicating machines of today. People have to see it, use it, make mistakes by it, profit by it before it will be really improved.

H.0.5.5 answer 8

Basically the responsibility for animating a school rests with the principal. I would like to have gotten the teachers more involved but the fact that it was only in the school as a temporary thing was one reason. We are not going to have it next year so why get started. The principal is the one who must animate and to help determine how it is being used in the school. They are the key. The principal, can not go on a guilt trip if the staff is not open to it. As principal, I have to see that teachers are teaching students to their best ability and if I see a teacher extremely



frustrated by me saying - you must go to Telidon, then I am not doing a service to the students. Working and counselling with teachers letting them know what is available on Telidon and ususally they will. If the Telidon was going to be here for a year, I would have really gotten myself plugged into saying that this would be good for grade 4 or 5 lets get into Telidon calling up programs.

H.0.5.6 answer 1

No, I did not use it that much, no not at all. This particular year with the crowding of things, office work and the things I had to do in the office, have really prevented me. I would have liked to have had more time to get into it.

H.0.5.7 answer 8

Our resource teacher took programs and set up work sheets to go with the programs. I do not think that it is necessary for the resource teacher. The classroom teacher can do that because she may have free time to do it. I am finding it difficult to plug into what a resource teacher really should do - ours is so skilled at it and that she does things on her own initiative. If the resource teacher is not plugged into Telidon, I do not think that it will be a success. I think, she is vital, maybe more vital than the principal in the actual workings. I see the principal as being the animator but the resource person as really plugging it into the teacher's programs.

**H.0.5.8 answer 9**

No, the resource teacher has a unique role.

**H.0.5.9 answer 10**

The placement of the Telidon terminal in the school is a very important thing. If Telidon were placed in the staff room, the onus would be on the staff because the resource teacher would not have the availability of it. We have placed it in the resource center which is a good spot for it, but if it were in the staff room, I could see teachers calling up programs and viewing the possibilities of it. In this case the onus would be on the whole staff. At the beginning, you would need an animator - people follow the line of least resistance. Previewing the material, being aware of what is available and knowing the teachers program can only be done if the teacher is willing to share the planning with the resource teacher. One great advantage is that they could replace textbooks if enough good programs are developed. Some of the material that is presented in books could easily be presented on Telidon. That puts more onus on the resource teacher to know what is available.

**H.0.5.10 answer 16**

A teacher. The person needs to have the technical ability also an awareness of the curriculum for the school. There must be an awareness of what is happening within the school.

The resource teacher has to gear the materials to the goals and objectives toward the school. Technical knowledge in how to operate it and a person who is aware of the general curriculum as well as a person who can relate well to the other teachers and staff members.

H.0.5.11 answer 17

No, I think the responsibility rests with the teachers too - a joint effort.

H.0.5.12 answer 18

Very much so. There is no point in bringing a class in to use Telidon if you have not seen the programs - you would not want a question to come up that you could not answer. I do not see a problem with Telidon because you can get the material or program when you want it. I do not see any problem in scheduling Telidon.

H.0.5.13 answer 19

Yes. I can see the Ministry of Education taking their guidelines and having good programs developed according to their perspective of what the schools should be doing and having those available to teachers. When the Ministry guidelines are setup in all courses having programs designed on Telidon that would help in the development of the education. If the Ministry wants to have people develop it and

use the expertise of some of our good professional people - we need to combine the technicians and the professionals that's what is needed in Telidon. Teachers could use the resource teacher in a more effective way.

H.0.5.14 answer 20

There has not been that much involvement with some of the teachers. But the students have been really excited. The programs do not have enough reinforcement for learning. The beauty of Telidon is that you can call it back. It is not like a TV or radio broadcast - that comes and goes, that's the strength of Telidon. I think that it is a great advance that they have made in technology.

Appendix I

INTERVIEWEE RESPONSE 3

I.0.6 Female Staff Member - June 21, 1982

I.0.6.1 answer 1

Personally and in front of the class daily.

I.0.6.2, answer 2

Yes. I think that it has great potential but the way it is right now, it needs some revamping. I think that the programmers are not teachers and vice versa which causes the programing to be less than effective pedagogically. The potential is certainly there for sound educational programing. Aside from the educational sequences, Telidon can be a very useful educational tool in terms of the information provided. The information can be accessed with very little knowledge in terms of the manipulation of the keypad. Since it is still in its infancy it still has a long way to grow.

I.0.6.3 answer 4

Small groups in terms of 6 to 8 because of the size of the monitor. If you had a larger monitor you could have a larger group. Also for the sake of interaction with the terminal ... the ideal would be one on one. It has been pretty well spread out in this school.

**I.0.6.4 answer 5**

Yes. It has to be someone who has a familiarity, a working familiarity with the equipment and its ability to introduce it.

**I.0.6.5 answer 6**

No. It is only an extension of the blackboard and it is still very much in need of somebody walking the students through the programs with the Telidon terminal. They are not self sufficient.

**I.0.6.6 answer 7**

I think that it is really relevant to the school. If every school was equipped with a Telidon terminal, I do not think that every resource teacher would be the key person. If you talk to other people who have done field testing, the Telidon is the possession of one classroom teacher only. Maybe somebody else would get a chance to use it. Whereas with this school, it is different from the rest in the sense that because I am here and in this position, I have caused the rest of the school to become aware of it. But if we are trying to make a general statement about resource person and Telidon, it would be too ambiguous. I think that it would go the same route of the PET computers in the school, ... I would say that yes, my role was very important in terms of the Telidon being here. I think that there was a great deal

of dependency for its usage. I could see the resource person being a catalyst in terms of getting the programs to be used. Since it is a new thing we can not make a general statement about what the role of the resource teacher will be with Telidon.

I.0.6.7 answer 8

It was key. My role was very important, if I had not been the catalyst, it would have sat in the closet. Telidon was here because I am here and therefore I felt the responsibility to be the catalyst and to get it going.

I.0.6.8 answer 10

You are making the presumption that the schools will have the availability of the Telidon terminal. I do not see that as being a reality for a while. I think that the role of the resource teacher in the school is changing as the technology changes just the same as the PET computers have become a part of the school. There will have to be a key person who will coordinate it and he/she will have to have a background in inservice and a set of skills to make it work in the school. That would be the dictate of the persons themselves and the principal. ... so long as it does not sit and gather dust but rather becomes an effective teaching tool. Just as we have other AV equipment in the school, they need to be pushed too.

**I.0.6.9 answer 5**

You try to get people to take the initiative and if they do not then you become a little more assertive by going out and getting their kids involved. I provided the inservice for the teachers, hopefully with the intent that they would carry on, some did, some didn't. I think that it is 50/50, if I had to grade myself. I would probably give myself a 50% mark because of things that I did that were successful and unsuccessful. Never having had any experience with it, I think that our school did remarkably well for the staff who used it and the things that we had learned from it.

**I.0.6.10 answer 12**

I do not think so. We all feel relatively comfortable if someone else is presenting for the group. There is no threat or problems. Six teachers to a greater or less degree.

**I.0.6.11 answer 16**

I think that the resource teacher should be a teaching technician. I think that he/she should have a technical background of the system in order to explain its function. But the role of the resource person is not simply Telidon and therefore has to have the skills available to manage the whole center of which Telidon may be a facet. Yes, we would have to have had inservice too. That is one thing that I



would have like more of in terms of getting involved in the equipment.

I.0.6.12 answer 17

It would be nice if we could but there is no reason why the resource teacher should be the programmer. The way it stands right now, there is no way that this school could have produced programs because of the distance from Toronto. If you need a sequence or program to suit a need then create it - just the same way that you create a ditto to meet your needs. ...I do not think that it should be the sole role of the resource person.

I.0.6.13 answer 18

I think so. If you do not preview existing programming, you can not use it effectively. If you are using a specific sequence that is a lesson or an educational program, then to do an effective pre-work or follow-up work, you have to have had to preview it. It is still in its infancy. I think that it will fit according to the particular need. There does not seem to be an overwhelming demand for it at this point in time, but I could see once being drawn up the same way as - there is one for the film projectors - simply signing in for the slot that you like.

**I.0.6.14 answer 19**

Yes. The future is much more exciting than the present. I think that it will become an apostle for its potential. I think that anyone who has looked at the system has become critical enough of it to know that its possibilities are limitless but it still has a long way to go - so it becomes that effective tool we want it to become. I am one of those already in terms of where resources are available. With regard to Telidon, I became such a person because I had the skills that were necessary to do that. I think with time each teacher should be equipped to do that and I think with time each child will be well enough equipped to become an information provider. It is just a matter of giving them the skills to do that.

**I.0.6.15 answer 20**

It has truly been a learning experience for me. I came into the experiment with the belief that this technology was really going to be an asset to education. I was disappointed with the fact that the educational sequences are not very good pedagogically. The potential is where it is at. Once they get teachers who are programmers or programmers who are teachers it will only sail. Once programs are made to meet specific needs and to fit in with curriculum guidelines from the Ministry, I can really see it being used much more to an advantage. I think that the wealth of information for the

data bases is exciting. Right now, there is not a lot of data in the banks. The awareness that everyone in our school has about Telidon and its possibilities, is exciting and I am glad that I had the opportunity to share that with everybody.

#### LIST OF REFERENCES

- Babbie, E. The Practice of Social Research. Belmont, California. Wadsworth Publishing Company Inc., 1979.
- Bennis, W. The Planning Of Change. New York. Holt, Rinehart and Winston, Inc., 1969.
- Bohlen, J. Research Needed on Adoption Models. In W. Schramm and D. Roberts (ed.), The Process and Effects of Mass Communication. Chicago, University of Illinois Press. 1974.
- Carlson, R.O. Adoption of Educational Innovations. Eugene: Center for the Advanced Study of Educational Administration. University of Oregon. 1965. 269-277.
- Daniel, J.S. Lessons from The Evaluation Of The Canadian Educational Experiments On The Hermes Satellite. In Irving Paghis (ed.). Hermes (The Communications Technology Satellite) Its Performance and Applications. Volume 3. The Royal Society of Canada. 1977.
- Eboch, S. The Study of Change as a Concept in Education. Theory Into Practice. 1966, 5, 34-38.
- Eichholz, G. Why do teachers reject change? Theory in Practice. 1963, 2, 264-268.
- Eichholz, G. and Rogers, E.M. Resistance to the Adoption of Audio-Visual Aids by Elementary School Teachers: Contrast and Similarities To Agricultural Innovations. In M.B. Miles (ed.). Innovation In Education. New York: Bureau of Publication, Teachers College. Columbia University. 1964.
- Gross, N. Giacquinta, J.B. and Bernstein, M. Implementing Organizational Innovations. New York: Basic Books Inc., 1971.
- Havelock, R. Planning For Innovation through Dissemination and Utilization of Knowledge. Institute for Social Research, University of Michigan. Ann Arbor, Michigan. 1969.

- Katz, E. The Social Itinerary of Technical Change: Two Studies of Diffusion of Innovation. In W. Schramm and D. Roberts (ed.). The Process and Effects of Mass Communication. Chicago, University of Illinois Press, 1974.
- Katz, E., Levin, M.L. and Hamilton, H. Traditions of Research On The Diffusion Of Innovation. In K. Sereno and C. Mortensen (ed.). Foundations Of Communication Theory. New York: Harper and Row, Publishers, 1970.
- Kozma, R.B. Faculty Development and the Adoption and Diffusion of Classroom Innovations. Journal of Higher Education. 1978, 49, 438-449.
- Lidtke, D.K. Securing Teacher Acceptance of Technology. Educational Resources Information Center. 1981, ED 208871, 1-22.
- Lofland, J. Doing Social Life. New York, New York. John Wiley and Sons, Inc., 1976.
- Miles, M. Innovation In Education. New York: Bureau of Publication, Teachers College Columbia University, 1964.
- Ribble, R. The Effect of Planned Change on the Classroom. Theory Into Practice. 1966, 5, 41-45.
- Rogers, E.M. Diffusion of Innovations. New York: The Free Press, 1962.
- Rogers, E.M. and Shoemaker, F.F. Communication Of Innovations: A Cross-Cultural Approach. New York: The Free Press, 1971.
- Rogers, E.M. and Agarwala-Rogers, R. Communication In Organizations. New York, New York. The Free Press, 1976.
- Ross, D.H. Administration for Adaptability. New York: Metropolitan School Study Council, 1958.
- Schultz, D.B. Teachers Adapt to Innovation. Educational Resources Information Center. 1979, ED 185495, 1-69.
- Stiles, L.J. and Robinson, B. Change in Education. In G. Zaltman (ed.). Processes and Phenomena of Social Change. New York: John Wiley and Sons Inc., 1973.
- TV Ontario. Telidon and Education: User's Manual. Toronto. TV Ontario and Department of Communication, 1980.
- Zaltman, G. Processes and Phenomena of Social Change. New York: John Wiley and Sons Inc., 1973.

Zaltman, G. and Duncan, R. Strategies for Planned Change.  
New York: John Wiley and Sons Inc., 1977.

**Chapter VI**

**VITA AUCTORIS**

Stanley Leroy Cole Braithwaite was born on July 2, 1953 in Toronto. He received his primary and secondary education in Toronto. In May 1978, he graduated from the University of Waterloo with a Bachelor of Arts degree.