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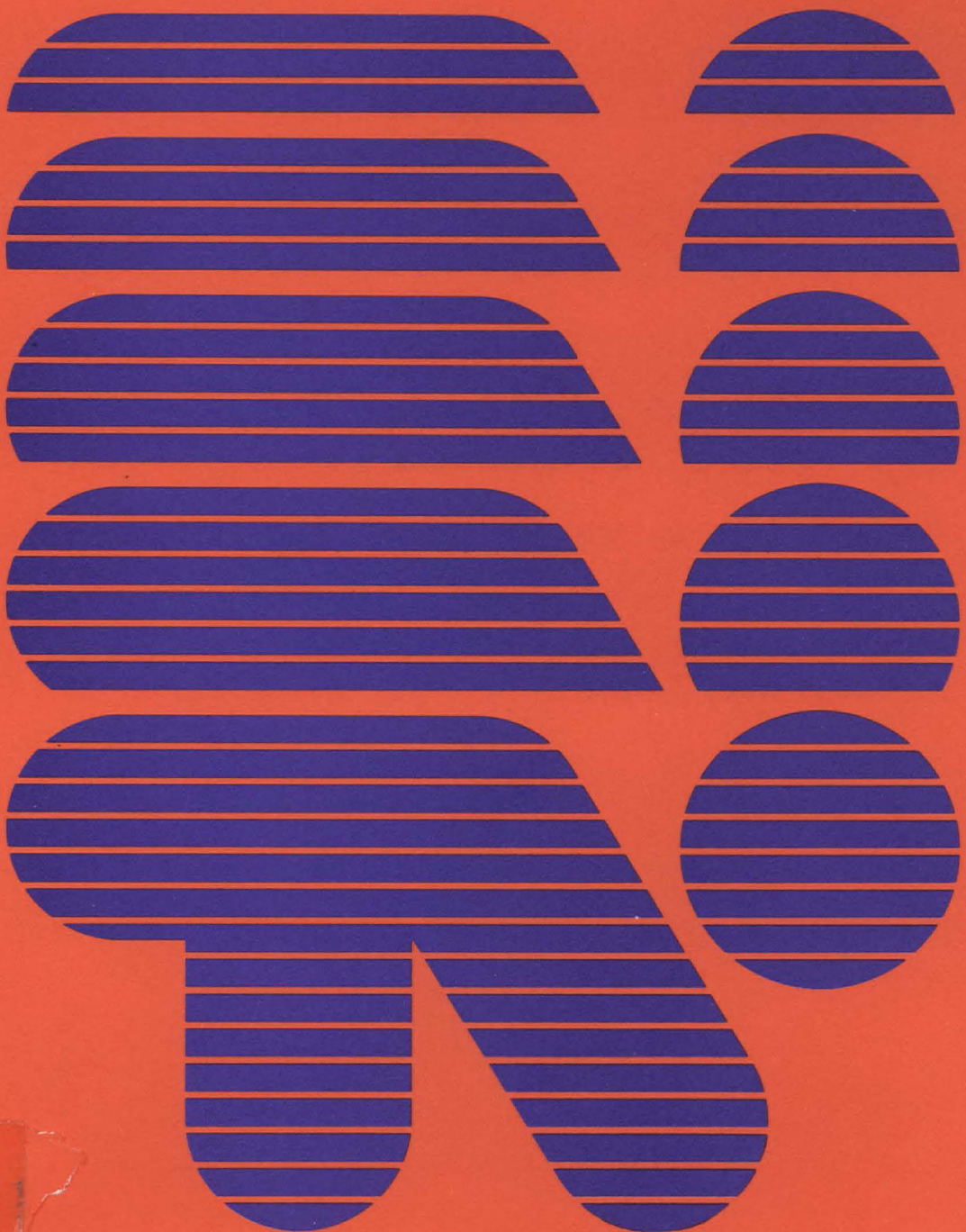
Report to Department of Communications, Canada
NORTHERN ONTARIO DISTANCE EDUCATION PROJECT (NODE)
EDUCATIONAL UTILIZATION OF TELIDON
DELIVERED BY SATELLITE
September 1982 - June 1983



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Report

to

Department of Communications

Canada

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NORTHERN ONTARIO DISTANCE EDUCATION PROJECT

(NODE)

EDUCATIONAL UTILIZATION OF TELIDON

DELIVERED BY SATELLITE

September 1982 - June 1983

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2 August 1983

Ms. Doris Jelly
Manager of Coordination
Communications Research Centre
Department of Communications
Shirley Bay
Box 11490, Station H
Ottawa, Ontario
K2H 8S2

Dear Ms. Jelly:

It is a sincere pleasure to report on the utilization transactions relating to our Northern Ontario Distance Education Project (NODE) being undertaken in the jurisdiction of the Lake Superior Board of Education. We look forward both to discussing the contents of this report with you, and the planned extension of this satellite-telephony project to March 1984.

Yours truly,

Don Robertson
Superintendent
Utilization Services

DR:ac
c.c. Margaret Twomey, Director of Education
Lake Superior Board of Education

Ron O'Connor, Projects Coordinator
Communications Research Centre/Dept. of Communications

W.T. Kerr, Acting Director, Space Applications
Communications Research Centre

Gerry Theriault, Supervisor, Field Services
TVOntario

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1.0 Introduction

In response to informal talks between the Department of Communications, Communications Research Branch, and TVOntario concerning a potential third phase to the use of the Anik B satellite, a telexed message dated June 30, 1982 from A.R. MacGregor at TVO to Terry Kerr at DOC outlined the Lake Superior Alternate Delivery Project as a source of mutual continuing interest. See Appendix 1.

1.1 The Lake Superior Alternative Delivery Project: Grade XIII Physics Delivery

The Lake Superior project is a joint undertaking of the Lake Superior Board of Education, the Ontario Ministry of Education, and TVOntario. Declining enrollment, along with serious deterioration of some school plants, had left the board with a crisis in range and delivery of courses, especially in senior secondary school. It was the consensus of a study team that a configuration of Ministry correspondence courses, television, microcomputers, and Telidon would provide an effective model for course delivery when the numbers of students were low and specialized teachers were unavailable.

An experimental Grade XIII physics course was implemented in

September 1981 in the Manitouwadge High School, and in the winter of 1982 in Terrace Bay. The physics correspondence course from the Ministry was the basis. The course material, consisting of 20 lessons, was changed to incorporate television programming, film, microcomputer programs, and Telidon information. Because of time constraints and the need to test and evaluate the entire process, the correspondence course was not fundamentally altered. A teacher/facilitator was available to supervise and aid students during their independent study, and a media area for student use, with Telidon equipment, TV monitor, videotape player, and microcomputers, was arranged.

The television component of this course was provided by TVOntario. All programming that supplements the Grade XIII physics curriculum was selected from TVOntario's inventory. A total of 30 programs were selected and matched to the lessons in the correspondence course.

Another component of this experimental course involved the use of Telidon in the videotex mode. Under the supervision of two teachers from the Lake Superior Board of Education, a file of over 100 pages of information was created by five secondary school students. These pages of physics-specific materials were then fed into the DOC database in Ottawa, as part of TVO's Telidon database. Using the Telidon equipment placed in the high school, students

were able to access this information at any time during the school day by means of a modem. This utilization was primarily information retrieval - electronic blackboarding in its most primitive sense.

In anticipation of the use of interactive sequences, two teachers from the Lake Superior Board were trained in the use of NATAL, the national authoring language for computer-assisted learning developed by Canada's National Research Council. The necessary hardware to develop such sequences was placed at the disposal of the Board by TVO. However, no sequences were developed during the first phase of this project.

Interactive physics tutorial programs were, however, developed for stand-alone 8-bit technology. These programs were created by Board staff to supplement the curriculum delivered by other media and to fill gaps where no significant resource existed.

Throughout the 1981-82 school year the process was evaluated by the cooperating agencies to ascertain the congruence of the materials with curriculum objectives and student performance.

Over the past two years the physics package has also been made available in Marathon, and in Harbord Collegiate, Toronto, the workplace of the correspondence course author.

This delivery has, for all intents and purposes, been operationalized for very small groups of students. But out of the potential envisioned by the Telidon/microcomputer/satellite interconnection was derived the utilization experiment which is the subject of this document.

1.2 Context of the Pilot Project

From TVOntario's perspective, given its growing interest in distance education, the project would provide an opportunity to test the use of telephony channels on satellite to handle interactive videotex, serving learning needs. Learners at remote sites across Ontario could conceivably gain access to educational opportunities on an equal basis with more populous communities. From the perspective of DOC, this field setting could provide a locus for experimentation on demand-assigned-multiple access (DAMA) techniques.

Over a period of some three months and a number of meetings, the cooperative concept was defined in a draft Memorandum of Understanding articulated in September of 1982. Originally the project was scheduled to terminate in May of 1983, however present plans are to extend the project to March 31, 1984.

1.3 Project Objectives

Draft objectives include the following:

a) To demonstrate the capabilities of satellite to provide interactive data communication.

b) To demonstrate the educational applications of Telidon 2-way satellite communications.

c) To provide information for future planning, in particular:
   - cost, reliability of transmission
   - public access and interest
   - networking possibilities, and problems
   - equipment requirements.

d) If the above three (a/b/c) objectives are met we should then develop a comprehensive proposal for the implementation of interactive data communications capable of supporting educational applications of Telidon via two-way satellite.

e) To explore the use of satellite as an alternate means of course delivery for Northern Ontario schools.

1.4 Reporting Procedure

Given the intended extension in term, and the expansion of the project to an estimated seven sites during 1983-84, what follows may be viewed as a report on the utilization transactions of the first year of Project NODE.

For the sake of clarification the terms "Lake Superior Project" or "physics delivery" refer to the original activity described in section 1.1 "Project NODE" or "satellite/telephony" refer to the activity which is the substance of this report.

More specifically, this report will address those Telidon utilization issues identified as the responsibility of TVO in the draft Memorandum of Understanding.

2.0 Relevant Literature

TVOntario's Telidon-In-Education field trial was born in 1978 when TVO proposed to test both the technology and its application to education. The funding for the trial was provided mainly by the Department of Communication but operated by TVO. The major research evaluation was published in December of 1982 in two volumes. The first contains a description of the field trial and research methodology with a discussion of all findings of the formative evaluation:

Telidon and Education: A Formative Evaluation for the TVOntario Field Trial 1981-1982 (Office of Project Research, Report No. 16, 1982, 160 pp.) Included in this major document is a section specifically dedicated to the application of Telidon in the physics delivery project.

Telidon and Education: Summary of Research and Findings from the TVOntario Field Trial Formative Evaluation 1981-1982 (Office of Project Research, Report No. 18, 1982, 27 pp.) (Appendix 2) A second report is an abridged version of the full report featuring a synthesis and discussion of all findings.

During 1981 and 1982 the effects of declining enrollments on the Lake Superior Board of Education and indeed other Northern Ontario Boards became the focus of a commission of inquiry. The Honourable Bette Stephenson, Minister of Education appointed G. Rodger Allan as a one-man commission to investigate the provisions of secondary education in small Ontario secondary schools. His report submitted on February 15th, 1983, contains recommendations on the implementation and use of electronic media toward providing an equality of educational opportunity to learners disadvantaged by geography. (See Section 5.0 of this report.)

See also Partners in Action: The Library Resource Centre in the School Curriculum pp 6-9, and ECOO Newsletter, Volume 4, No. 1, March 1983, "Educational Use of Info Globe: three perspectives." (Appendix 3)

From the technological perspective see also
Pike, C. Lake Superior Project (TVO, Telidon, DSL) Program Report. Ottawa: Department of Communications/Communications

Research Centre, September 30, 1982.

Please note that some ambiguity of reference has been established around the enterprise, and the above document refers to the present Project NODE.

The print sources noted are referenced within this report and are available from TVO upon request.

3.0 Utilization Transactions

3.1 Increasing and Varied Utilization

Fundamental to an increase in usage of both the system and its information during 1982-83 was increased use by those teachers who had used the materials during the physics delivery phase, whether for physics or for other content in the database. This in turn led to other teachers using materials.

It is important to know that during the satellite/telephony activity, every student in each of the three high schools had access to the system. In the Marathon high school this meant 190 students spread across all grades, in Manitouwadge 267 students; and in Terrace Bay 230 students. In Terrace Bay four classes undertook dedicated assignments which required use of the terminal, while in Marathon some eight classes undertook directed

assignments. The number in Manitouwadge was ten.

A second factor of importance was the influence of the school librarians in creating a positive attitude among staff generally to the use of the terminals.

At the same time, the number of students utilizing the terminals increased. Following an initial phase of examination and play with the new technology, students motivated their peers as well as their teachers to employ the information in the databases in learning experiences.

Much of the excitement leading to increased usage came as a result of both an increased volume and variety of information available to both students and teachers. Materials available during the physics delivery experience presented users with relatively static, structured, limited volume resources. The availability of the materials in the Bell Vista field trial served to enhance the possible uses of Telidon in the learning environment.

TVOntario's composed database is primarily of curriculum support files. In most cases, sequences were designed by educators with specific aims meeting personal needs and reflecting individual styles in presentation of content. This, in itself, does not downgrade the value of the database; it does, however, restrict a

broader and perhaps more creative use of information by individuals because the sequencing of events does not suit their personal teaching or learning styles.

The volume and variety of data, too, acts as a limiter to the effective use of Telidon as an educational resource. By this we mean that there was insufficient depth and breadth of content available in the TVOntario database to satisfy the needs of the users throughout the province.

Having viewed a specific sequence in a classroom setting, the value of that particular file diminished. There appeared to be no motivation to explore further a concept or to branch to related topics.

VISTA's database, while incorporating the subject-specific information in the TVO database, brought a wealth of current general data to students and teachers. The very general nature of the information and the constant updating of statistical data acted as a stimulant to the possible uses of that data by teachers and pupils. The active database appeals to the creative instincts of teachers in presenting information to their students and gives the students an opportunity to present materials which are current and real today. For the student, the difference is reflected in creating a research document based on information from a 1970

edition of an encyclopedia, versus data which reflects the real world on March 12, 1983 at 2:04 p.m.

New information is available in 1982-83 that was not available before. Originally only the physics pages aimed at the specific needs of the schools in the Lake Superior Board acted as the drawing card to further usage. Now, access to the Toronto Stock Exchange is available which is a key item in Economics classes. In the past, students required to maintain a stock portfolio during the course relied upon sketchy radio reports and three-day old newspapers, if available. The VISTA database provides up-to-date data beginning at 10:15 a.m. each trading day. To suggest that only the students took advantage of the current nature of the data would be faulty: teachers, too, took personal interest in what was happening with their personal portfolios. The database provided a practical learning situation utilizing real world events.

Dominion Store material on the care and presentation of frozen foods became a resource for Home Economics students. This information was used by students for an assignment on menu planning and food preparation. Telidon was used as a resource tool which once again provided information about real world events.

TVOntario's database provided an excellent Eurasian geography review. This sequence married the traditional pen-and-paper/book

learning process with new technology. The objective of the review was to identify a country based upon clues dealing with latitude and longitude, birth/death rates, food consumption, and gross national product. Students have to have knowledge of mapping skills, be able to calculate natural increase, recognize the relationship between food consumption statistics and level of economic development, and the meaning of "GNP" in order to locate the specific nation successfully. The end result of the exercise is a test of learned skills; the reward is a completed map dividing Eurasia into regions of technological development.

Up-to-date weather information is a welcomed new addition. These weather sequences have assisted both staff and students form a general interest point-of-view in deciding whether some school events should take place. Can we safely send a busload of students to another community without the likelihood of winter storms effecting the event? Weather is part of the northern way of life.

Grade 11 law students have been introduced to the Canadian Constitution and Human Rights issues through the Telidon terminal. The information is clear, concise and to the point, providing information around which interpretation and discussion occur.

Game sequence such as Mystery at Manor House require students to remember past sequence of events before selecting future options.

Games, while not necessarily nor apparently educational in themselves, provide an opportunity to simulate real-life events, hone manipulative skills, evaluate experiences, and generally enhance logical thinking skills.

Science students encountering difficulty in the structure and use of the Periodic Table are able to access data which provides a review. Often viewing a concept from another point of view leads to clearer understanding. This specific sequence while containing some graphic weaknesses has assisted students in clarifying their notions of complex structures. The diagnostic use of the Telidon system in this way allows teachers to devote attention to students individually for examination and clarification.

3.2 Key Factors Contributing to More Effective Utilization

New information of a general nature along with real-world statistics appear to be key factors in increased utilization of Telidon in the learning processes. However, new information, by itself, is not sufficient to account for the renewed interest in this second phase. A more effective system improving access is now in place.

A more effective use of the librarian and relocation of the hardware from classrooms and basement closets to the library

resource centre have had far-reaching implications for classroom dynamics using Telidon technology. Implied here is a movement away from traditional teacher-centred classroom methodology toward a more learner-centred facilitative style of teaching methodology.

A key to the success of the satellite/telephony phase has been the willingness of the librarians to explore and exploit the potential of the databases and hardware, and to promote their availability to teachers. The librarians have become first line trouble-shooters for the technology because of an in-school system established to overcome technical difficulties. Downtime which can frustrate and ultimately negate use has been reduced to acceptably low levels. The teacher-librarian's role has changed from management of a limited number of static resource volumes to a more technologically oriented manager of dynamic, electronic information sources.

For the satellite/telephony phase, the location of the terminal in the library has been ideal. While the mere location does not imply increased usage by itself, it does enhance accessibility by students and teachers. Inherent in this change of location to libraries is the need for a high degree of in-service training, concerning the role of the resource centre, to librarians, teaching

staff, and administration. At the present time, without the support of all parties concerned, as discussed in the MOE document "Partners in Action" the focus of libraries as a learning centre along with its electronic and other resources will not occur. For reasons of paedagogy and economy the library resource centre should become a hub of school activity unless some distribution system internal to the school makes electronic access available in the classroom.

Initially, teachers complained of insufficient time to preview and prepare materials for lessons, thus precluding the medium. The librarian undertook the role of "first searcher" of the database for both teacher and students, directing information from the databases to the appropriate course teacher. To lessen further the effects of time constraints, librarians eventually employed students to search systematically the database for specific content. Students entered their findings on an anecdotal log sheet (Appendix 4) which could be supplied to teachers or processed through further research by the librarian. This technique implies a strategy for bridging the gap between an electronic print medium and the traditional paper print media of schools, thus allowing information to be specifically gathered and used. Processes such as this hone the students' evaluative skills with respect to information relevancy.

The need to bridge the gap between paper-print and electronic-print came from the field trial evaluation which identified an access problem using the tree structure of the system. This has been rectified in part over the year, through the use of short lists and anecdotal listings. There is still some frustration with the numerical accessing system due to the unwieldy number of indices required to get to specific content. The current configuration of indices which structure the information by panel (elementary, secondary, college...) and subject index (math, history...) shortens the operation of the search process. Changes to these formats is better than before but not best. A still better system of accessing information is required. A keyword system is available in newer editions of the technology that include an alphanumeric keyboard. This technique should be given serious consideration as an alternative to the numerical index approach. The TVO database which contains the School Guidance Information System (SGIS) files is accessed by this keyword technology, and will, incidentally, be available along with other guidance-related materials to the project school during 1983-84.

Paper print provided by the librarians in the form of documentation has also increased the usage of the satellite/telephony system. Each teacher was provided with a concise, step-by-step set of instructions, for logging on to the system (Appendix 5). Support documentation for a sequence and teaching strategies have also been

provided to teachers at the local level. Such documentation need only be brief and to the point:

1. Subject: Home Economics

   Sequence: How to Prepare and Freeze Vegetables

   Access: 1. Log on VISTA
   2. Enter (page no.) CR

   Strategies: 1. Student research project
   2. Group viewing - discussion
   3. Practicum

   or

2. Subject: Economics

   Sequence: Toronto Stock Exchange

   Access: 1. Log on VISTA
   2. Enter (page no.) CR

   Strategies: 1. Students monitor daily, personal stock porfolio (duration)
   2. 100 da. chart paper) price
   3. 100 wk. chart paper) volume

Documentation serves to reduce fears of utilizing the technology and speeds up access time into the database.

User satisfaction time was shortened by the move from 300 baud to 1200, thus removing a negative psychological factor in usage of the system. However, the speed could still be increased to overcome the frustration arising from the design of specific sequences of information which rely upon repetitive imagery. This might also be viewed as a page creation problem where unnecessary repetition creates a delay in the receipt of more information.

4.0 Telidon and Education: Some Theoretical Consideration

4.1 Teacher and Learner Style

Educational telecommunications media are altering the teacher-pupil dynamic in profound but as yet largely unexplored ways. The phenomenon of "information overload" - the inability of the human organism to assimilate volumes of cognitive and affective input - can create a debilitating distress to life process. One can hypothesize that successful teaching and learning styles will, in the future, be evaluated by the criterion of successful adaptation to the reality of an already enormous and ever-expanding volume of information.

Current theory organizes teacher styles along a continuum

Traditional - Facilitative - Collaboratorial

At the risk of being simplistic, the traditional style is

characterized by the teacher-dominant classroom. The teaching strategy here is that of giver or provider of content, organized into a universe of thought, appropriate to the prevailing wisdom concerning age, grade, and perhaps, sex. The facilitative style is characterized by a guiding or coaching role of the teacher whose strategies are to create educational experience through content in an expanding or opening universe. At the collaboratorial end of the continuum, the distinction between teacher and learner has disappeared and the educational life process is a shared decision-making as among peers. One example of such activity is experimental research.

In the face of information expansion and the increasing availability of information through electronic means, traditional teaching practice becomes virtually impossible beyond a certain point in the learner's development. It can also be strongly argued that educational practice which limits access to information is contraproductive in a democratic society.

It will become increasingly necessary, it appears, to encourage facilitating styles of teaching practice which will not cast the teachers in some untenably omniscient role.

Learning theorists have begun to shift away from paedagogic considerations - those considerations of how children learn, to

andragogical considerations, or those evidences about how adults learn. Paedagogy and andragogy are not mutually exclusive in their contexts: indeed, their blending suggests a learner style continuum which is parallel but certainly not point-for-point isometric with the teacher-style continuum.

Dependency - Independency - Interdependency

The movement from dependency through independency to interdependency can be defined by an increase in the learner's ability to be self-directed as an individual. Needless to say, the continuum also implies a socialization process which occurs across time. Also implicit here is a constantly changing relationship of learner to mentor.

4.2 The Impact of the Smorgasbord of Information

The physics delivery succeeded in meeting its goals but in a very uneconomical fashion. It further confirmed a number of perceptions about learning that are relevant to future electronic distance delivery strategies.

The content of Ontario's Grade XIII physics program is conceptually demanding in itself. The rich "smorgasbord" of learning opportunities both electronic and traditional constituted an information overload of overwhelming proportion, before steps were taken to systematize materials for the pupils by a content

specialist. It had been assumed that by Grade XIII the level of self-direction would have been sufficient to allow students to progress on their own. The human factor is critical: the teacher figure cannot be removed from the dynamic - if ever. In our social context self-direction is a learned ability, and must be nurtured in an educational environment where the learner is allowed to move from teacher dependency to self-dependency.

Current teaching practice lacks an emphasis on those strategies which allow teachers to be comfortable in developing self-direction in the learner. Adult education practice has much to offer here turning on the assumption that the learner's experience in life are a valid input to the growth process.

Happily, facilitative strategies too can be learned, but this will require a redirection in current professional development practice at the pre-service and in-service levels.

It is important to note that the Australian distance education practice confirms that self-direction activity can be begun much earlier than we in Canada expect.

Depth of learning is measured in terms of acquisition of higher order analytic and synthetic process. The learner recognizes an increasing complexity of patterns and is able to synthesize

information into yet other new patterns. Content ceases to be as important because the problem is no longer acquisition of information, given its volume, but rather, coping cognitively and affectively with this content.

It is tantalizing to suggest that if a significant movement to self-direction in our schools were begun earlier, given our increasingly sophisticated electronic access mechanism to information, the outcome in time would be undreamed of meaning in our notions of freedom, democracy, responsibility, and creativity, with new and exciting solutions to our existential problems.

5.0 The Future

5.1 The Longer Term

Some sense of short and long term directions for satellite telephony in Ontario education can be extrapolated from the recommendations of the Commissioner of Inquiry, G. Rodger Allan, in his report of February 1983 as follows:

"That the Ministry of Education under the joint leadership of the Correspondence Education Branch, the Senior and Continuing

Education Branch and the Computers in Education Project develop a number of courses using the Computer-Assisted Instruction method and the Computer-Managed Instruction mode of pacing and monitoring. The Ontario Educational Communications Authority should be involved in determining the most propitious way of delivering the courses to the small northern high schools. Representatives from those agencies involved in the development of the courses, along with an equal number of representatives of the Ontario Teachers' Federation should form an advisory committee to supervise and implement the project.

Rationale: The development of this courseware will provide a back-up system to those schools that cannot offer a complete program for students moving to post-secondary education. Because courses could be used during teacher strikes, and since the right to strike is a legal right for teachers, it is necessary that the Federations be involved in the management of the project to ensure that it is used properly."

"That the Ministry of Education Northwestern Regional Office supply consultant personnel to the small secondary schools, in computer science, computer-assisted instruction and independent learning techniques. If Program Councils are established, these consultants should be under their direction.

Rationale: The understanding of this new teaching/learning method is not present in all of small northern schools. Priority should be given to the development of teacher skills and knowledge in computer science and the use of the computer in other subjects."

"That self-learning packages be developed in areas such as electronics, data processing, and word processing.

Rationale: Work is now being done by the Correspondence Courses Branch on electronics. The other areas which could be part of existing school credits should be started."

"That the Senior and Continuing Education Branch request funds from BILD (Board of Industrial Leadership and Development) to equip a Hi-Technology Van and turn the operation over to the Northwestern Regional Office or the Program Councils.

Rationale: It is necessary to keep the students in small secondary schools in Northern Ontario up to date with developments in technology."

5.2 The Immediate Future

The Northern Ontario Distance Education Project is taking place at an exciting yet volatile period in Ontario educational history.

The promise of electronic communications technology lies in the cost-effective delivery of educational opportunity to those disadvantaged by geography. The environment into which this hypothesis is set is characterized by a major reconstitution of the secondary school system into a four-year time frame, a major commitment on behalf of the Government of Ontario to the promotion and use of computers and allied electronic technology across K-13 education, financial restraint and an ambivalence toward change.

However, over the past year we have glimpsed the promise of satellite/telephony. With respect to the objectives identified in section 1.3 it is clear that in a qualitative sense the capabilities of the satellite to provide interactive data, communication for education have been demonstrated. Similarly the utility of the Telidon system has been demonstrated in the context of its applicability to school curriculum. However, the degree to which we have developed sufficient information as a basis for economic modelling remains problematic.

Certainly a quantification of use patterns and the generation of other utilization statistics are most desirable and should, if possible, be maintained through some electronic data-logging system. The keeping of manual logs is not sufficient. This issue must be addressed in 1983-84. In addition demonstration and research relating to the downloading of software - certainly the

"capture" of Telidon pages - should be further explored. The deliberate use of voice/data communication in the tutorial setting might also be demonstrated.

The report of G. Rodger Allen underscores a genuine need - perhaps a need that persists beyond Ontario's boundaries. That a permanent system such as is defined under the current NODE project could come into existence is entirely probable within a term of say, five years.

At the time of publication of this report, it was the intent of DOC and TVO to expand the project to include school sites in some five or six remote Ontario communities.

It is the opinion of the authors of this report that the expansion of the project and its extension for at least one year will well serve not only the principle of social equity in the long term, but will also advance the notion of cost-effectiveness through the intelligent application of technology and enlightened management of the frequency spectrum - desirable outcomes for all participating jurisdictions.

Appendix 1

True Copy: Kerr/MacGregor Correspondence, 30 June 1981

Terry Kerr
DOC
Shirley Bay

As per our telephone conversation here is a brief description of what we call the Lake Superior Project

..The Lake Superior Project is a joint undertaking of the Lake Superior Board of Education, the Ministry of Education and TVOntario. From the Board's perspective, declining enrollment, along with serious deterioriation of some schools plants, have left the board in a crisis with respect to the range and delivery of courses, especially in senior secondary school. It was the consensus of the study team that some configuration of television or, when appropriate, Telidon, along with correspondence direction, computer assistance and in school tutoring would provide an effective model for course delivery where the number of students is low and specialized teachers unavailable.

In consequence an experimental Grade XIII physics course is being planned for implementation in the Manitouwadge High School for September 1981. TVOntario will make available the necessary videotape from its existing inventory and is exploring the possibility of additional acquisitions in the physics area. Four Telidon terminals will be deployed across the four secondary schools in their jurisdiction - Manitouwadge, Marathon, Terrace Bay and Schrieber. Special electronics pages will be created in support of the physics course and will be constantly under development. This course will be implemented during the second semester in the Terrace Bay campus of Lake Superior High School..

Furthermore there is the possibility that in 1982 we may wish to access the Telidon data bank in Ottawa for material related to the physics course and other courses including a planned life skill course.

This is all in the preplanning stage and may be suitable for Phase III of Anik B.

Your comments would be welcome.

A.R. MacGregor
TVOntario
Toronto Ontario
TELEX NO 0623547

CC P. Bowers
D. Robertson

Appendix 2:

Telidon and Education: Summary of Research and Findings from the TVOntario Field Trial Formative Evaluation 1981-1982.

This document is being distributed under separate cover to readers external to TVOntario.

TVO readers may obtain copies from the Part-Time Learning Branch.

ECOO Newsletter Vol. 4, No. 1: March, 1983

COMPUTER LITERACY

By Tim Crawford

Many attempts have been made to define computer literacy. Clearly the problem arises when one attempts to use the word 'literacy' to describe knowledge and skills related to computers. It has its roots in describing the degree or the level of competence in reading and writing, and how these skills assist a person to function effectively in a complex society. A very literate person, not only has these skills, but also has an understanding of the great ideas of society as a result of extensive reading of the books judged by society to be important works.

Clearly the word 'literacy' is not easily adapted to describe what is commonly thought of as computer literacy. Moreover, case must be taken not to imply that computer literacy for this generation supercedes the need for traditional literacy, nor to imply that it is of a similar magnitude for this generation as traditional literacy was for the past. However, in the same way the skills of reading and writing enabled a person to function effectively in the past, some computer knowledge and skills will not only assist current and future generations to function in society but also to obtain more from what our society has to offer.

A course in Computer Literacy should not necessarily be limited, therefore, to what might be considered a passive functional definition. It should reflect the intent to enhance the students' understanding of the world and enable the students to acquire from our evolving information society opportunities for intellectual, artistic and creative growth.

A Course in Computer Literacy

A Computer Literacy course should provide students with the opportunity to explore the many components relating to computers and other high technology devices, learn how to use some of these to advantage and to appreciate the impact on society of high technology. The course provides the student with the opportunity to:

-- learn a wide range of concepts;

-- be introduced to a number of computer-related skills with the objective of learning how to utilize information processing equipment to their own personal advantage;

-- develop an appreciation of his or her own potential in related fields, as well as the potential and limitations of computers;

-- explore the implications of the wide range of computer applications and procedures, and, to discuss critically issues arising from them.

Computer Literacy Curriculum

Numerous distinguished educators have expressed a need for a more balanced computer literacy curriculum. In at least two addresses at the 1982 Conference on Computers in Education sponsored by the Educational Computing Organization of Ontario, computer science professors suggested that far too much time is spent on programming in Computer Science. It was suggested that not more than fifty percent of the time should be on programming in any course with the balance spent on other aspects of computing. Dr. Papert, for example, appealed to educators to develop a course similar to what he found in Europe. It was a very sensible balanced curriculum, given the name 'informatique'.

There is a need for less emphasis on the machine and programming. More emphasis is needed on the type of information which is processed and the impact it is having. A decade ago, Norman Longworth at the Southern Science and Technology Forum in Southampton, U.S. said:

"Recently, however a broader and probably healthier approach has emerged. The original preoccupation with the fascination of the machine is being put into wider context, and much more educational thought is being put into the applications of the computer in many fields, into its effect on the functionings of society and into the nature of the information which is stored and processed by the machine. It is also a reasonable statement that the main impact has yet to be

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EDUCATIONAL USE OF INFO GLOBE: THREE PERSPECTIVES

The impact of computers is being recognized in an increasing number of aspects of education. The emphasis is -- as it must be at this time -- on providing instruction about computers and on introducing computer technology as a support to learning in classroom activities. However, the Information Age, which computer technology makes possible, will place new demands on people to be able to access, manipulate, use and evaluate masses of data held in electronic storage.

This three-part article outlines a project which attempts to offer secondary students the opportunity to use remote databases for assignments and at the same time give students and teachers a chance to develop the database skills involved. The project was set up as a pilot study with the clear understanding that it may not prove cost effective and therefore may not be worth continuing. The comments presented here represent an unofficial interim evaluation written from the points of view of a consultant of computer education, a school librarian and chairman of librarian's computer committee, and a classroom teacher and teacher of computer science.

A PROPOSAL AND PLAN

By Jo Ann Wilton

In budget planning over a year ago, a project was proposed to introduce Info Globe capability to the libraries of the secondary schools in Peel. The objectives included:

-- offering students access to a large, worthwhile database for assignment research.

-- providing teachers of all subjects the chance to evaluate the appropriateness of such an activity for their own courses.

-- monitoring the pattern of use in different schools, both in terms of intensity of use and the types of searches requested.

-- comparing two modes of access: one using direct modem contact from the school library and one using a remote contact in which the search request is sent to a central location in the Board, transmitted to Info Globe and the printout sent from Info Globe to the school.

-- evaluating Info Globe, itself, as a useful database for the school curricula.

-- developing specific database research skills among librarians.

-- developing database awareness and search strategies among teachers and students of courses for which accessing was done.

-- contributing to the general computer literacy of the school population through general awareness or more specific demonstrations of the Info Globe process.

Why *Info Globe*?

Info Globe was chosen because of the breadth of the topics covered, the range of searches possible from full text search to dateline searches. At a later time, consideration will be given to expanding the number of databases accessible. It was appropriate to stick with one until the librarians had more fully tested the capabilities of both their skills and the database on a variety of tasks.

All but two of the 24 senior secondary schools in Peel elected to be involved. Each school was given a starting budget of $400 and four schools which volunteered were provided with a modem to use for direct access. All librarians were invited to a presentation by Info Globe staff intended to initiate the project and promote involvement. A training session was later conducted for those librarians whose schools had opted to participate. A part of that training session included discussion of the various strategies being considered by each school to:

-- decide for whom or for which courses Info Globe would be available as a resource in the initial year.

-- introduce Info Globe to the staff, both those who would be involved directly and those who would not.

-- actually manage search preparation,

The most obvious disadvantage, of course, is the high cost of Info Globe. The values are there but the funding may not be. The possibility of having students pay for their own searches leads to the problem of some students being able to retrieve more information than others simply because they have more money. This difference in resources also affects the ability of a student to drive to a library or go to a city research location but the schools cannot set up an unequal situation. A fair amount of training is necessary to become familiar with the techniques and terminology of Info Globe and it is therefore impractical to have students do their own search. We have solved this problem by having the students go through all the initial planning of search strategies and terms, but the actual search is done by the librarian or in some schools sent to the central Board office. In addition, it does not seem wise to allow many people access to our personal account number at Info Globe.

These problems are all relatively minor and as experience is gained, the cost of searches becomes less and the value of the information retrieved becomes greater. As the pilot study draws to a close, it would seem appropriate to recommend that schools continue to offer database research for students.

My recommendations are:

1) That funding continue to be provided at the Board level.

2) That each school involved in the project have a modem.

3) That other databases be added gradually, e.g. New York Times, Newstex.

4) That schools not yet involved again be given the opportunity to join.

5) That additional inservice training be provided periodically.

INFO GLOBE IN THE CURRICULUM
A TEACHER'S PERSPECTIVE

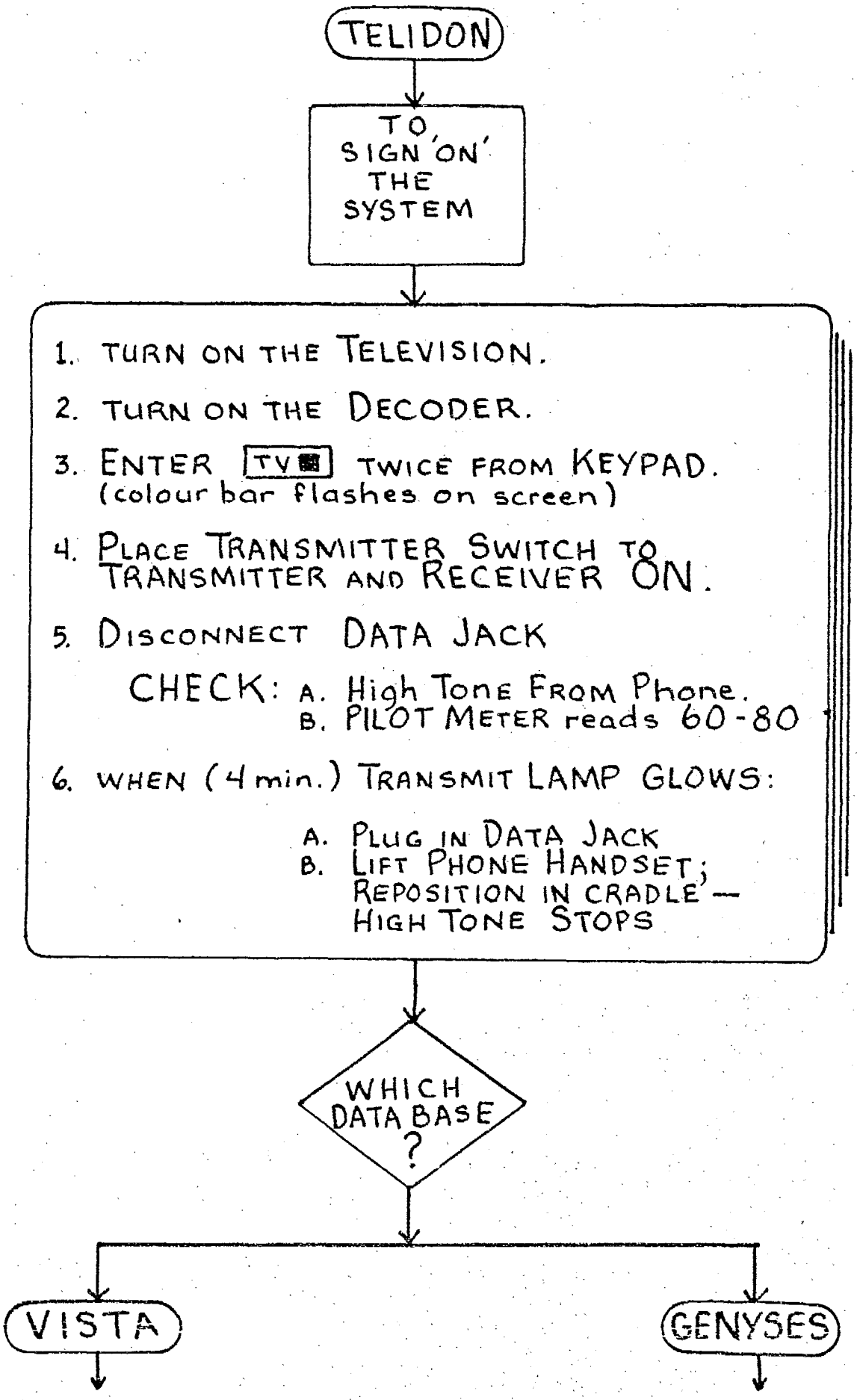
By Debbie Lang
Glenforest Secondary School

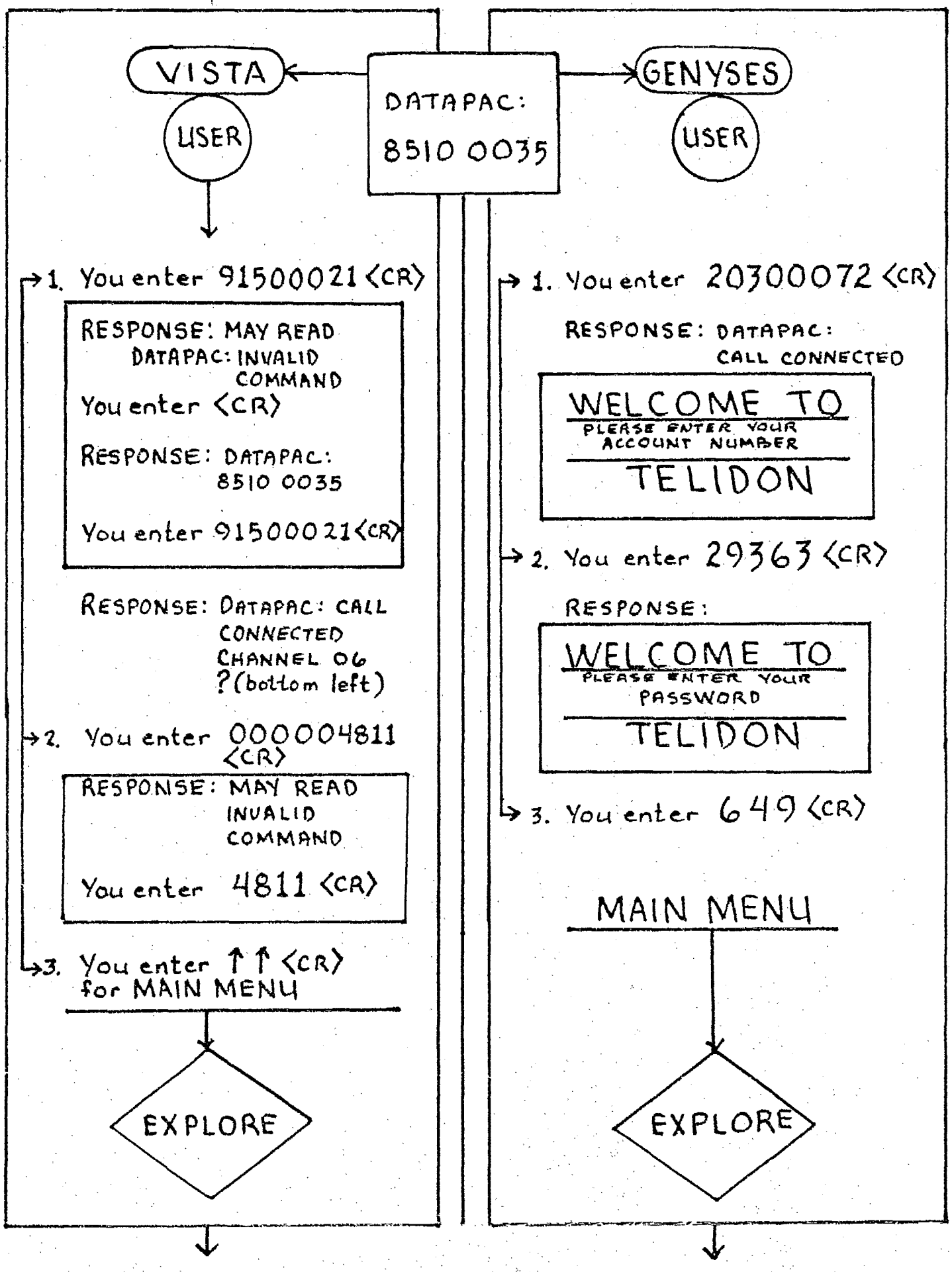
Having direct on-line access to Info Globe in our school has allowed us to create an integrated unit on telecommunications for our senior computer studies students. The unit included such topics as how to access a database via a modem, advantages and disadvantages of database access, societal issues such as security of information and invasion of privacy, commercial computer networks and networking configurations.

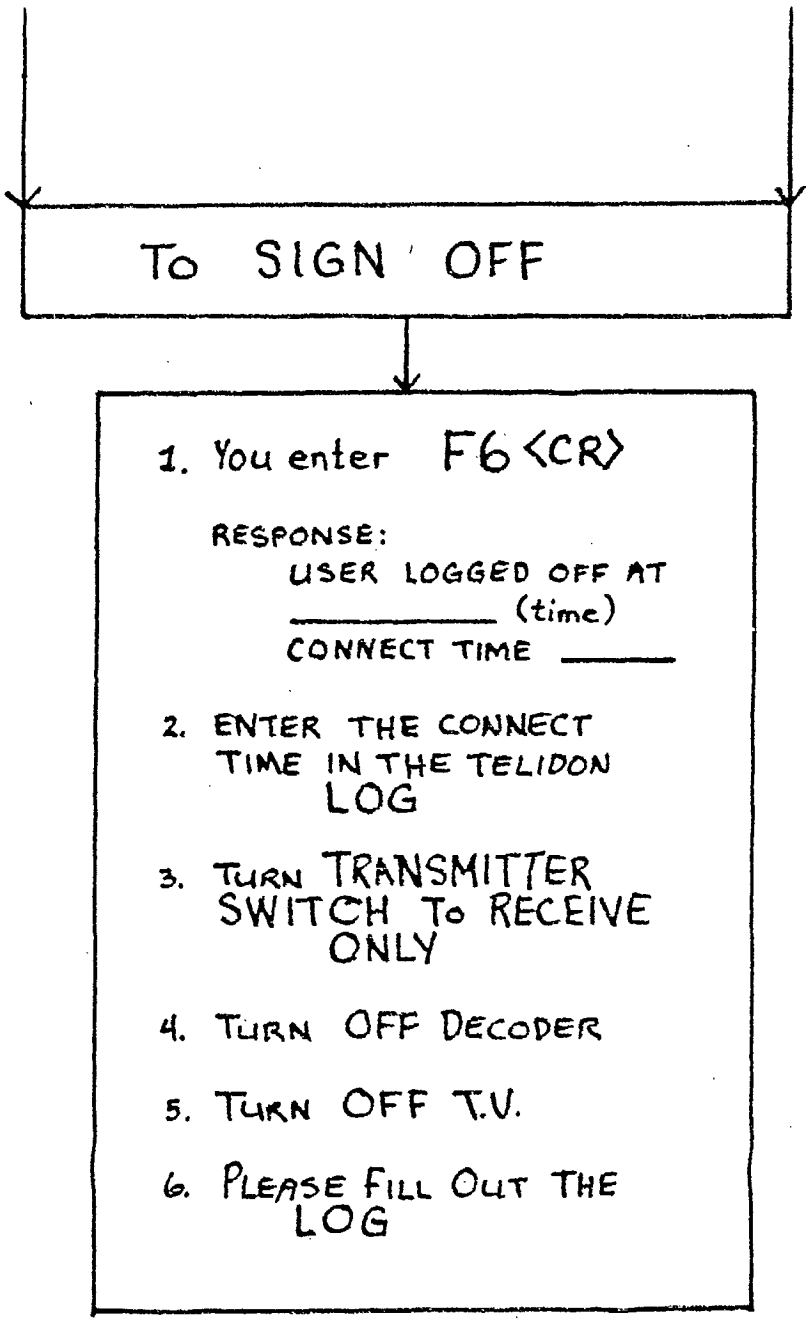
In preparation for the first hand demonstration in our library, the class viewed "Towards the Ultimate System" from the Fast Forward Series. The information on this videotape is somewhat dated, (a late 70's production) but provides adequate background on information systems such as Viewdata, Ceefax and Viewgraphics and gives

TELIDON LOG

DATABASE (✓)		USER (✓)		TIME	TOPIC	COMMENTS	DATE
VISTA	GENISES	TEACHER	STUDENT	MIN.			


TELIDON
TO 'SIGN ON' THE SYSTEM
1. TURN ON THE TELEVISION.
2. TURN ON THE DECODER.
3. ENTER TV TWICE FROM KEYPAD. (colour bar flashes on screen)
4. PLACE TRANSMITTER SWITCH TO TRANSMITTER AND RECEIVER ON.
5. DISCONNECT DATA JACK
CHECK: A. High Tone From Phone.
B. PILOT METER reads 60-80
6. WHEN (4 min.) TRANSMIT LAMP GLOWS:
A. PLUG IN DATA JACK
B. LIFT PHONE HANDSET; REPOSITION IN CRADLE — HIGH TONE STOPS
WHICH DATA BASE ?
VISTA
GENYSES


VISTA
USER
DATAPAC:
8510 0035
GENYSES
USER
1. You enter 91500021 <CR>
RESPONSE: MAY READ
DATAPAC: INVALID
COMMAND
You enter <CR>
RESPONSE: DATAPAC:
8510 0035
You enter 91500021 <CR>
RESPONSE: DATAPAC: CALL
CONNECTED
CHANNEL 06
?(bottom left)
2. You enter 000004811
<CR>
RESPONSE: MAY READ
INVALID
COMMAND
You enter 4811 <CR>
3. You enter ↑↑ <CR>
for MAIN MENU
EXPLORE
1. You enter 20300072 <CR>
RESPONSE: DATAPAC:
CALL CONNECTED
WELCOME TO
PLEASE ENTER YOUR
ACCOUNT NUMBER
TELIDON
2. You enter 29363 <CR>
RESPONSE:
WELCOME TO
PLEASE ENTER YOUR
PASSWORD
TELIDON
3. You enter 649 <CR>
MAIN MENU
EXPLORE


To SIGN OFF
1. You enter F6 <CR>
RESPONSE:
USER LOGGED OFF AT
_____ (time)
CONNECT TIME _____
2. ENTER THE CONNECT TIME IN THE TELIDON LOG
3. TURN TRANSMITTER SWITCH To RECEIVE ONLY
4. TURN OFF DECODER
5. TURN OFF T.V.
6. PLEASE FILL OUT THE LOG