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The state of older media in Alberta schools : a survey of the perceptionns of school administrators

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THE STATE OF OLDER MEDIA IN ALBERTA SCHOOLS:

A SURVEY OF THE PERCEPTIONS OF SCHOOL ADMINISTRATORS

by

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ABSTRACT

This project was the results of a survey sent to five hundred schools in Alberta in the Spring of 1995 to assess the perceptions of educators about what was happening with respect to low and high technology. The return rate was approximately 40% and the volunteer sample represented 13% of Alberta schools across three levels of elementary, junior high, and high school. An examination of the educational literature implied that traditional media is being largely disregarded in favor of newer electronic technology. However, analysis of the survey data gathered indicated that *both* forms of technology were used on a regular basis in the classroom. The survey also indicated that there was a strong need for planned transition that would support diffusion and adoption at the electronic media into the larger family of institutional media.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

THE PROBLEM

Rationale

My initial involvement with educational media began in the Spring of 1990 when, as a student, I completed an education course entitled *Mediated Presentations in the Classroom.* The course focused on various media which could be utilized for disseminating information to students. It was during that time that I discovered that educational media was a field of instruction which offered me an opportunity to focus and enhance my pedagogical skills. However, it should be duly noted that media are agencies which are to be used to transmit understanding and are in themselves means not ends. As a result, for the purpose of this paper, I will consider any teaching activity involving the use of media as *instruction with creativity (planned/spontaneous) which can be used to help extend the web of relationships betwwen concepts.* This idea is synonymous with Dale (1969) who in presenting his Cone of Experience model wrote,

> Our understanding of the Cone of Experience, moreover, will remind us of a fundamental principle of our teaching; we do not use any one medium of communication in isolation. Rather, we use many

> instructional materials to help the student conceptualize his/her experience so he/she can deal with it effectively . (p. 133)

To get the most from teaching with media, i.e., to stimulate creativity, the teacher needs to engage continually in the process of instructional development. Rosenberg (1978, p. 12) stated,

> If curriculum development is concerned with what should be taught, then instructional development is concerned with determining *how* the teaching should be carried out... . Instructional development is the process of creating the most effective means to arrive at curricular ends.

Educational media in my opinion, is a forum which provides teachers with the resources and the practical means to vary instruction to create as Rosenberg (1978) indicated "the most effective means to arrive at curricular ends." Understandably, since that first media course I have volunteered and worked in the Educational Media Area (media lab) of Faculty of Education at every opportunity.

Throughout the years that I have spent participating in activities in the media lab at The University of Lethbridge I have noticed changes were occurring in that field of instruction. I have also observed that many locally produced resources (bulletin boards, storyboards, posters, newspaper cutouts etc.) which were used for motivational purposes in the classroom were presently under-utilized by student teachers and practising teachers. Use of the 16mm film projector is seriously declining and instruction in its use has been removed from the learning module for beginning student teachers at The University of Lethbridge. Thermal transparencies and photographic slides are used less frequently in teacher presentations. The emphasis on television teaching as an

instructional medium is changing, especially with the recent accessibility to the Internet and its simulated environment[1]. Although these examples represent a few of the noticeable changes, the idea of researching the under-utilization of older media became a major focus of inquiry for me.

Instructional teaching activities which were done using traditional[2] audiovisual media, were no longer considered to be important enough to include in the educational preparation for student teachers at The University of Lethbridge. I decided then to examine, through questioning, the declining use of audiovisual media in the schools against the context of the innovative[3] media of computer technology. Apparently present users of innovative media feel that all those learning activities, involving the traditional audiovisual media, could be easily replaced by computerized multi-media software and hardware. Bossert (1988, p. 279) who provided his vision of a classroom in the twenty-first century wrote, "In the future, a field trip to anywhere can be as easy as pressing a key on a student's personal processor." The technology would then make museums and libraries more accessible, particularly benefiting economically disadvantaged and handicapped students. In Bossert's view "high-quality data and audiovisual access to libraries and museums would deepen students' intellectual engagement with the world outside the school

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1 an environment in which an actual situation is emulated by identifying variables relevant to the real-life situation.

2 refers to audiovisual software and hardware such as films, slides and slide-projectors, overhead transparencies, video and audiotape recording.

3 refers to newer technology such as digital cameras, compact discs and computer hardware and software

while avoiding the logistical headaches associated with field trips." (Bossert, 1988, p. 280).

It is not my aim in this paper to argue for one form of technology over the other, but to raise questions with regard to the approach which is being undertaken by educators to quickly embrace the computerized classroom. Hathaway (1989, p. 2) reminds us that,

> ....technology is a force that must be dealt with in education and because of the rapidity with which the technological force is growing, it must be dealt with soon. One of the problems is that of devising ways of using technology which are both effective and efficient and which also strengthen the professional role of teachers.

So the fact that some of the older media are rapidly being replaced is not the main issue of contention. Cohen (1988) asserts in the history of older technologies, such as paperback books and educational television, that a general relationship between technologies and educational change is usually present. In short, technologies do not drive change but only provide opportunities for change. Therefore, what is of greater concern to me is the rampant desire by many educational faculties and students to deem *all* of the traditional audiovisual media obsolete even while we are aware that most schools may still be dependent on them.

While working as a lab assistant in the Educational Media Area, part of my job description was to supervise Professional Semester I[4] student teachers as they completed the required media module. The purpose of this module was

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4 A generic term used for the first teaching practicum in which students operate more or less in the traditional "student teaching " capacity.

to engage the student teacher in effective use of audiovisual hardware in the classroom lesson. The media which were used most frequently for that module were the slide projector and the filmstrip projector.

During my interaction with these students, I was constantly aware of their overall attitude to the learning exercises. The learning activities were often accompanied by constant grumbling and a visible lack of enthusiasm. These non-verbal messages caused me to inquire further into the reasons which initiated those behaviours and I found out that the silent protest was totally directed at the hardware. I was also confronted by participating students with questions such as "Why do we need to learn this obsolete archaic method of presenting information?"; "Schools do not use filmstrips anymore!"; "I will never need to use this and therefore I am wasting my time!" and other statements of a similar nature. But the statement that had the greatest impact on me and got me thinking was "All schools presently have computers and we do not need to use this form (referring to the traditional media) of media to conduct our presentations"- certainly a conclusive, yet thought provoking statement, indeed. Of course, the impact of technology on educational practice is nothing new - recall the efforts of Franklin Bobbitt's[5] early twentieth century attempt to make schools more efficient using technology with techniques borrowed from industry. However, being a

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[5]Franklin Bobbitt (1876-1952) - A member of the faculty in educational administration at the University of Chicago in the early 1900s; famous for developing the modern concept of "objective analysis," a forerunner of job and task analysis. Bobbitt believed that in order for schools to become more effective school had to become more efficient and that the means of becoming more effective and or efficient was modern technology.

supporter of the traditional forms of media, these criticisms reinforced my desire to find the truth inherent in the situation. Further they warranted research into the utilization and availability of the non-computerized audiovisual material and hardware in Alberta schools.

I felt that it was important to find out whether Alberta schools were still effectively utilizing their traditional audiovisual materials and hardware. Were these schools/principals in agreement with many of the student teachers and had they, indeed, discarded the low-end technology in favour of the high-end multimedia technology? What forms of low-end media were still in use in the schools of Alberta? Information on this aspect of the media would be beneficial to the future development of educational media programs and also in the preparation of student teachers at The University of Lethbridge. While it may be true that a total technological revolution for education may be forthcoming, it is my belief that it has not yet arrived in such force to warrant complete rejection of instruction in traditional media in teacher education programs.

Change

Why the rush to make the transition from low-end technology to high-end technology? Mander (1992, p. 61) credited one of the reasons for the rapid transition to computers was a dedicated push from computer manufacturers when he stated,

> Computer manufacturers are successfully convincing school systems that they cannot get along without them (computers). Many companies are supplying free computers to classrooms, with the eventual goal that each of fifty million high school and college kids will own a personal computer.

True, computers are one aspect of the high-end technology, some other components include videodisc, compact disc, television satellite receivers to name a few. But all other forms of high-end technology (in my opinion) pale in comparison to the computer and its peripherals in terms of their impact on schools. In fact, the computer is already identified as the "one-stop" piece of hardware for all forms of multimedia production including video and sound. But again we need to raise the question, why the rush? Another reason could be speed for speed's sake — a concept which "is celebrated as if it were a virtue in itself" (Mander, 1992, p. 64).

It is pertinent to research the transition from traditional media to innovative media because it allows us as educators to go beyond general perceptions and assumptions about particular educational practices. It is also important to know what is happening with respect to the "old" media in relation to the "new" media. Thus determining the current the state of the older media in the Province of Alberta have become the focus for my study.

Innovation should be a welcome activity in education, but ironically innovative teaching efforts often fail for a variety of reasons (Meyer, 1978). The most significant of the four reasons cited is resistance to change, which provides a measure of insurance against failure and is usually based on misconception, fear, laziness and misinformation (Meyer, 1978, p. 44). Mander (1992) attributes this resistance to change to the results which increased use

of computers will produce. He writes, "the certainty of computer programs will replace subtlety of student-teacher interaction. . . . replacing teachers with computers will create an ominous uniformity of knowledge." (Mander,1992, p. 62)

So while the rapid development and expansion of computers may make media production speedier and attractive, I believe to ignore the importance of the older technologies in schools without qualitative or quantitative evidence is inappropriate. So in this study I have sought to answer the questions: Do the older technologies still have a role to play in the schools? And, if so, what is that role in the context of the newer technologies?

Limitations of the Survey

There are some limitations to this study :

1. The population sample was a volunteer sample.
2. Given the general state of the health of the older media the validity of each individual survey was dependent upon the personal impressions of the school principal or designate and might not be representative of the expressed opinions of the members of staff.
3. Any kind of self report is affected by individual bias.
4. It was assumed that the participants would answer the questions with such thought and honesty that their opinion would reflect the state of audiovisual media in Alberta schools.

CHAPTER 2.

REVIEW OF LITERATURE

Introduction

Throughout most of the last four decades, the literature (Cohen, Kulik & Kulik, 1980; Bangert, Kulik & Williams, 1983; Kulik, Kulik & Shwalb, 1986) has shown evidence of the enthusiasm that accompanies the introduction of newer forms of technology in the instructional setting by adoptees of that medium. Komoski (1987, p. 5) writes,

> One reason advocates of the "advanced learning technologies" are so confident of technology's ability to "deliver improved learning" is a significant body of evaluation studies reporting on the efficacy of computer-based instructional systems.

Today, that urgent enthusiasm for computer multimedia technology in Alberta schools is no different from that expressed in the1970s when instructional television had experienced tremendous growth, and the television screen began to replace the movie screen for the viewing of prepared material (Reiser, 1987).

A review of media in education shows that since the turn of the century, teachers have used various types of audio and visual aids to help them supplement instruction in their teaching. Usually with the adoption of each

new form of technology the language became alive with wonderful rationales for the new media.

When film was introduced into the classroom setting, Dale (1969, p. 140) identified Vandermeer's research which suggested "there is little doubt about the effectiveness of films in teaching perceptual-motor skills." The researcher indicated that filmstrip projectors, slide projectors and overhead projectors were revolutionary machines which were "extremely effective for developing heightened attention and for encouraging student and teacher participation in the learning process." (Dale,1969, p. 141-160). The general impression about audiovisual materials at this time was that these innovations would provide freshness and variety, encourage active participation, give needed reinforcement, assure order and continuity of thought and improve the effectiveness of traditional instruction. Dale (1969, p. 614) further claimed that "we must think about audiovisual materials as an integral part of a unified system of instruction. . . . " Isaac, in a report to the The Faculty of Education about their technology plan, asserted "that computers be an integral part of each course as tools for the enhancement and implementation of instruction..." (Isaac, personal communication, April 18, 1996). But this notion of full integration of technology has accompanied many of the earlier forms of technology as well.

When we refer to educational media we refer to a form of technology as an educational resource which dominated the educational scene from the1950s tthrough the 1970s. That time was also known as "The Age of Information" (Schramm, 1975). It must also be noted that the term "technology" is broad

and must be defined in a form that it can be connected to the concept (educational media) for which it is being used. According to Gillett (1973, p. 2) technology is seen by contemporary writers as "a constellation of interlocking systems and activities which get work done with a constantly diminishing input of human labour, or more simply, the organization of knowledge for achievement of practical purposes."

Thus technology, in its own way, is a mechanism designed to encourage harmony and understanding between nations through the flow of information. Schramm (1975. p. 6) reminds us that

> Twice in the last five centuries — when printing came into use in Western Europe in the fifteenth century, and when film and electronic communication became widely available in the late nineteenth/ early twentieth centuries — communication technology changed so spectacularly that it affected all human life... . Printing made knowledge portable beyond the sound of a voice... . When film and technology came into use, they provided a different code... . The effects of these developments on the life patterns of people and society are readily apparent, but it is too early yet to assess their deeper impact.

He further wrote, "The changes I have mentioned came as a result of new technology, I do not now foresee any *newer* technology bringing about newer comparable changes" (Schramm,1975. p. 6).

Presently there is the assumption that Schramm's new technology, now considered old technology, is dead but what of the future vision of Schramm (1975, p. 7) when he asserted "But I do not think that it is the new technology that is going to write the new chapter... . Rather it is the harvest of all the older technology... ." Such a statement is appropriate since in the history of technology a new technological form rarely, if ever, completely replaces an older

one. One such example is the blackboard. In the 1850s the blackboard (presently referred to as the chalkboard) was hailed as a great advance over the use of the individual slate because it improved group teaching by enabling teachers to put explanations in visual forms so that all could see (Dale, 1969). The blackboard is still being utilized in classrooms, supplemented by the whiteboard.

Film, audio media and television changed the individual's whole perception of life. Television, for example, was "the device that worried the movie industry, the newspaper industry, the magazine industry" (Gillett, 1973, p. 33). The point here is that the medium of television raised concern about whether it made a difference to teaching and learning and the rightful place of the other media. This is the same voice of inquiry which is present in this study, with respect to the utilization of old media in schools. Are old media dead and no longer playing a vital role in the enterprise of teaching and learning? Winn (1984, p. 31) stated,

> ...a medium (television, film, text, lecture, etc.) is nothing more than a device for getting information from one point to another. Logically, it cannot make a difference to how people learn, anymore than (to borrow an analogy) the truck that delivers a new appliance to your home makes a difference to the appliance and how it will be used.

When Laird (1978) posed the questions, "Should we continue buying increasingly expensive media equipment?" and "Which kinds of equipment should they be?", these questions activated a school board survey in Springfield, Oregon to determine the kinds of equipment teachers used, how they used it and how *much* they used it. The overall findings of that survey

revealed that "audiovisual materials and equipment play a major role in the education program. . . " (Laird, 1978, p. 23). That concept is still very important, except that presently the media hardware materials are being upgraded (hi-tech) much more quickly, raising teachers' fears, timidity and conservatism—attitudes that are often related to the increasing complexity of machines (Gillett,1973; Hathaway,1989; Mander,1992). Gillett (1973, p. 94) reminds us that teachers' fears usually emerge "when substantial change is imposed from the top without full and frank consultation with teachers" (p. 94) and this does not only relate to educational technology, but to all significant changes occurring in the educational environment.

In a survey done by Alberta Education (1993) of teacher uses of computers it was stated that "the level of staff training in the use of microcomputers in the school was rated *less than satisfactory* by 43% of respondents. Forty-six percent rated the current availability of microcomputers to staff and students as *less than satisfactory*". Since availability determines utilization it seems fair to assume (based on these survey results) that many teachers would still be relying on the older forms of media to supplement their delivery of instruction.

But there is an assumption which seems to be widely held that audiovisual materials have either ceased to be used or have become so limited that their use is negligible. Again with the rapid development and expansion of computers in the schools, the need for earlier technologies is being questioned and the old technologies that are present in the schools are ignored, at least by some universities, because the new technologies represent a better way to

communicate and get things done. Heinich, Molenda, Russell and Smaldino (1996, p. 23) note,

> ...we must keep in mind that equipment lingers in a setting even though use of the associated media formats may be declining... . We know that media centres are buying videos instead of 16mm films, but film projectors will remain in use as long as films are still available. The relatively rapid acceptance of computers dedicated to instruction is encouraging, but the adoption of other new technologies, such as videodiscs, is slower than a perusal of the periodical literature would suggest. Although most educators would like to see newer technologies adopted at a faster pace, many acknowledge that the more traditional media still have a place in the school.

As a reminder, in one of the first textbooks written about the use of audiovisual materials in schools, Hoban, Hoban and Zissman (1937) stated that the value of audiovisual material was a function of their degree of realism.

Seidman (1986) stated that several researchers indicated that a majority of teachers seldom used media in their teaching and although part of the problem was partially due to the unavailability of the hardware and software the researchers, Bellamy, Whitaker and White[6] suggested that the problem was mainly attitudinal. On the other hand, Seidman (1986) identified survey data (Dobbert,1976; B. Johnson,1983;. J. Johnson and Ehlinger,1978; Liesener, 1978) that showed elementary school teachers tend to utilize media more frequently than their colleagues in middle or junior high school and in senior high schools.

In an effort to become more informed, Seidman (1986) decided to investigate whether or not differences actually existed in the utilization of

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6 (cited in Seidman)

media by teachers at different levels. The survey results, which produced a 37% participation rate by Fort Worth school teachers, revealed that recent and complex media, computers and video machines, were least utilized. The data also revealed that overhead projectors were the media most frequently utilized by all school levels. Filmstrip projectors and audiotape recorders were more frequently used by elementary school teachers than teachers at the other levels, while senior high teachers were more involved with slide projectors and videotape recorders. For the most part, Seidman's results are consistent with those from previous surveys. In a similar survey done in 1978 with Springfield teachers, results showed that many teachers used overhead transparencies and audiotapes as their first choices based on the subject or message needed to be conveyed (Laird, 1978).

In another survey related to classroom media use, Carter and Wedman (1985) focused on the use and production of media for teaching, and the type and amount of media being produced by the classroom teacher. Results of media production indicated that in utilizing media "teachers were most likely to produce material that is relatively easy and inexpensive to make, such as bulletin boards and overhead transparencies" (Carter & Wedman, 1985, p. 37). Results related to teacher use of instructional media for presentations showed that teachers utilized overhead projectors, 16mm projectors and filmstrip projectors extensively. It should be noted that computer multimedia production was not included in this survey.

Carter and Wedman (1985, p. 39) concluded from this research that "teachers are more likely to use those materials that are easiest and least

expensive to produce and the more advanced the technical requirements for equipment operation, the less likely it is that teachers will use that equipment."

When one considers that Alberta schools presently have a sizeable inventory of audiovisual equipment and proposals are in effect by some Alberta Government representatives to ensure that all schools, "have equitable access to technology and technology experience" (Alberta Education, 1995, p. 3), there is a need to look at where the old media are in relation to the desire for new media at a time when cutbacks in education are being absorbed into the educational system.

In a survey conducted in U. S. Schools by Smith and Ingersoll (1984) to determine the availability and use of both microcomputers and traditional materials in schools, results showed that "trends in data do not show a growth pattern for traditional audiovisual packages" but while this could be as a result of large expenditures on microcomputers, "the *use* [italics added] of audiovisual materials seems to be very stable" (Smith & Ingersoll, 1984, p. 38) Also arising out of that same survey analysis was, "the inference that microcomputers are absorbing most of the available dollars for technology in U.S.A. schools, and that traditional media materials will sit in a back seat" (Smith & Ingersoll, 1984, p. 38)

One then wonders why the results of a survey of *The Use of Computers in Education Worldwide*, a comparative survey of eighteen countries compiled by Pelgrum and Plomp (1991, p. 10), concluded that one of the main problems with computers in schools is "....lack of time to prepare lessons in which

computers are used.". The researchers wrote,

> ...throughout the world there is a continuous (albeit quite unequal) development of access of schools to computers, increasing amounts of computer equipment are installed in schools and -gradually- increasing numbers of teachers/students are using computers for instructional purposes. Despite this development there is still a lot of inequity in access to computers, even in highly developed countries, and educational practitioners feel that a number of basic conditions for using computers for instructional purposes have not yet been fulfilled: there is a shortage of hardware, shortage of software, teachers are insufficiently trained and teachers don't have enough time for preparing the use of computers in their lessons adequately (Pelgrum & Plomp, 1991, p. 14).

The purpose of constantly identifying computers or hi-tech equipment as being under-utilized, despite their present existence in schools, is necessary to this paper. This under-utilization of hi-tech equipment helps to strengthen the need for research related to the "health" and utilization of the older technology in Alberta schools. Pelgrum and Plomp (1991, p. 15) also noted,

> ....one of the most provoking expectations expressed was the potential of computers to reshape education. . . . Our data seems to demonstrate that this situation is far from being realized as the use of computers is still quite heavily dominated by what might be called low-level adoption...

Research describing the current situation regarding the availability and utilization of audiovisual education material in Japanese school and social education facilities is an excellent background reference for this research. The report looks at "utilization of audiovisual equipment in terms of teacher/instructor, equipment, subject matter... ." (Japan Audio-Visual Education Association, 1993, Abstract). The survey which recorded a 97.9% participation rate from a total of 11,496 schools and facilities showed that the schools in Japan possess a sizeable complement of audiovisual equipment.

Schools held in inventory an average of 15 computers per school, 14.4 television monitors, 12.6 audiotape recorders and 9.3 overhead projectors (Japan Audio-Visual Education Association, 1993). This is a positive indicator that older technology is very secure in the school setting. The survey of Japanese schools also found that there generally existed an increase in availability for some forms of media such as the compact disc, computers and videodisc players— an average of 33% increase over a 1989 equivalent survey. While this increase supports the perception that traditional media use is declining and older media are in fact being replaced, it does not in any way attest to the notion that older media are "dead". Further analysis of data, according to subject matter, showed that 16mm film projectors, slide projectors, audio tape recorders and overhead projectors still enjoy considerable use as much as video tape recorders, video cameras and computers.

In conclusion, the literature review reflects the hypothesis, that traditional media still have a place in schools. There is evidence of the declining use of some hardware such as film and filmstrip projectors, slide projectors and even audiotape recorders. But as Heinich, Molenda, Russell and Smoldina (1996, p. 23) note, "we must keep in mind that equipment lingers in a setting even though use of the associated media format may be declining." Overhead projectors and video recorders are still commonly used. Teachers, though, have begun to expand their repertoire of materials and resources to include the newer media, but this is a much slower transition than prevailing opinion would have us believe.

According to a 1994 *Training* magazine survey, video-based instruction is

used by more companies with over one hundred employees than any other medium. Lecture, supported by overhead transparencies is the next most frequently used form of communication. Thus, even in industry, transition from lo-tech to high-tech is slow in coming, but it is important to acknowledge that company size is an important factor when utilizing newer technologies.

Storage capability for the traditional media is in the form of reel-to-reel tapes, film, slides audio and video recordings, and these are still a cost effective means of supplementing teaching. The newer technology (computers), on the other hand, relies on expensive and very necessary add-ons, such as memory chips, video capture cards, additional hard drive space and improved graphic capabilities which are not usually part of the initial purchase. Audio and video when integrated into application packages make for a richer, more realistic learning and teaching experience, but the storage requirements for multimedia productions are immense. These factors are important for schools to consider when lobbying for the utilization of computer-mediated technologies. Older media formats may still be more viable to produce moving images or musical production.

Computer multimedia instruction is here to stay and in the longer term it will likely replace many of the older technologies as the primary medium of instruction, but I contend that, like the blackboard, there exists a continuing need for support of the older forms of media in the classroom curriculum. In favour of a marriage of the different forms of media, Dale (1969, p. 7) refers to a *systems approach* and stated that "by using a systems approach we can successfully integrate the older, more familiar methods and tools of instruction

with the new ones as we modernize the curriculum of school and college." But to get the most from the coexistence of the differing technologies (systems approach) teachers, administrators and policymakers need to recognize that the old media are still viable and valuable resources in the teaching and learning environment.

Also equally important, this literature review has shown that there is a lack of recent literature (1990s) which addresses the issue of the decline in the use of traditional media. In fact, literature from the late 1980s to the mid-1990s related to educational media utilization, mainly addresses the implementation and utilization of computers in schools and this may be one contributing reason why many are of the opinion that traditional audiovisual media have been abandoned.

The Proposed Study

A discussion paper prepared by the Alberta Government, universities such as University of British Columbia and the University of Lethbridge and schools such as Terry Fox in Calgary, Huntington Hills and Notre Dame in Red Deer. What do they all have in common? They are committed to the notion that the integration of computerized technology in schools "provide the opportunity to make instruction *more effective* because they can focus more of their time on instruction and devote less energy to administrative tasks" (Technology Integration in Education, 1995, p. 1). With the promise of a technology that will be able to do everything and more, Ganske (1996, p. 14) advocates,

> There may be a significant difference in this battle to that of the technology wars of the past. With computer technology we have stronger promise in a technological form which advocates *doing it all.* It may be truly the integrating medium which can incorporate all the characteristics contained in its predecessors—handling text, images, sounds and adding to this a self-contained intelligence which keeps track of everything. Both video and film had proponents which saw these media as capable of revolutionizing education but few people actually believed in these promises. The difference with computer technology is that many people believe the promise in the technology.

Surely, the new medium of computer technology will provide students with rich and memorable experiences and will impact on strategies related to curriculum, but such a change should be gradual and conservative. Dupagne and Krendi (1992, p.424) in *Teachers' Attitudes Towards Computers: Review of the Literature* summarized that

> Teachers share a number of concerns about computers in the classroom. These apprehensions focus on hardware and software issues (including availability and quality), the necessary investments of the teacher's time to fully integrate computers into the curriculum, and the lack of adequate training programs to build teachers' confidence and abilities to use the technology to its fullest potential.

There are also budgetary demands to consider. Huntington (1983) summarizes that though computers may assist tremendously in handling information and the decision making process, policymakers and school administrators must be aware that it takes a great deal of time to computerize schools (Huntington, 1983, p. 92-97). In other words, upon acquisition of the hardware and software, there is also staff training to consider along with the changes to the infrastructure such as the rewiring of the building and the continued servicing and upgrading that may be required. Nevertheless, some school districts such

as Lethbridge School District No. 51 are going ahead with the acquisition of the newer technologies (compact discs, computers and peripherals) in spite of the recent cutbacks to education.

What then does a teacher use for communication technology, while policymakers are attempting to ensure equitable, affordable access to technology? Abrams (1996, p. 3) states that "we need to realize that multimedia is an evolving discipline. . . . Multimedia needs to find its own identity, capitalizing on its strengths and avoiding its weaknesses." The point here is that all the present multimedia productions are expensive and complex. As cited earlier, although computers and their peripherals are becoming more affordable and readily available, the older forms of media, while perceived by proponents of computer technology to be declining in use, are still being utilized routinely in the schools.

Thus based on the review of the existing literature I propose to survey the schools about their use of audiovisual resources. I believe that it is important to examine the declining use of audiovisual media in the schools against the context of the newer "innovative media" of computer technology in a more specific way than it has been done in the literature up to the present.

Finally, based on review of the literature, it is apparent that the availability and utilization of traditional audiovisual equipment in Alberta schools has not been a topic of recent concern, as much as the computerization of schools, so principals and teachers will have valuable information from the results of this study. The rationale for this survey is based squarely on the proposition that we can learn how to integrate the new

technology by an examination of our experiences with past technologies. This knowledge can help us to avoid some of the problems and provide new insights into the potential and useful practices of putting technology to work in an effective educational system.

CHAPTER 3.

RESEARCH DESIGN

Methodology

A review of the literature has shown that surveys have been the conventional method (Dupagne & Krendl, 1992) used in evaluating the use of media in schools. The rationale may be that surveys are inexpensive to conduct, and are generally used to determine opinions, attitudes, preferences and the perceptions of people. Since the general purpose of this research study is to acquire the perceptions of volunteer samples[7] as to the current state of audiovisual education in the province of Alberta, a survey was chosen as the means to provide answers to the research question.

The survey is used in this study to determine prevailing opinion in the schools on the following topics:

Part I: Inventory

(1) Extent of existing inventory of audiovisual equipment in Alberta schools.

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7 Volunteer samples so called because when some individuals refuse to participate in a study, the remaining individuals no longer constitute a random sample because those who agree to participate are likely to be different from those who do not (Borg, Gall & Gall, 1993 , p. 99).

(2) planned purchases in the next 12 months

(3) identification of the location of audiovisual and the effect of location on use of those resources.

Part II: Use

Patterns of current media use in Alberta schools to test the assumption that traditional media were seldom used or were receiving negligible use in the schools of Alberta;

Part III: Context

Extent and nature of computer influence on the traditional media.

Succinctly stated, the main purpose of the study is to ask several focussed questions to the practitioners (in this case, principals) in the school with the purpose of obtaining a view of current practice and an indication of prevailing attitude toward the old technology in the context of the new technology.

Research Population and Sampling Technique

Using stratified[8] randomization across the three categories of public schools, namely, Elementary[9], Junior High[10] and High school[11], 500 schools were randomly chosen from a computer generated list of 1647 operating public and separate schools in Alberta. These 500 schools served as the

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8 ensuring that individuals in the population who have certain characteristics are represented in the sample

9 Category 1 : (Grades K-6)

10 Category 2 : (Grades 7-9) also includes (Grades K-9) schools

11 Category 3 : (Grades 10-12) also includes (Grades K-12) and (Grades 7-12) schools

volunteer sample for the survey. The ratios used in the computer generated randomization were the same as the actual ratios of each school type (elementary, junior high, senior high) to the total population of schools. The surveys were mailed to the selected schools along with a postage paid envelope in which to return the completed survey.

One important limitation of the survey was that responses were those of one person, the school principal (or designate of the school principal), and these responses might not necessarily reflect the overall attitudes of teachers in each individual school. When the limitation of choosing a single person to act as a spokesperson for the school, it seemed appropriate that the school's decision-maker should be the appropriate candidate. This premise is supported by Dupagne and Krendl (1992) who stated that the school principal is the main initiator in stimulating change in the school.

Instrumentation

In an effort to determine the prevailing opinion with respect to the older and, to a lesser degree, the newer technologies, the survey instrument (See Appendix I) was designed with sixteen fixed-choice questions. These items are further sub-divided into five parts and are as follows;

Part 1. Demographics

Part 2. Audiovisual Hardware and Facilities

Part 3. School Media Use and Patterns

Part 4. Lo-Tech Hi-Tech Comparisons and Influences

Part 5. Expectations and Needs.

Some redundancies are deliberately built into the survey instrument to cross check its validity and to extend the breath and depth of the response.

Demographics

The spokespeople identify themselves and provide some background information about their school and its population.

Audiovisual Hardware and Facilities

Related information about the inventory of audiovisual equipment (non-computerized) held in the school and similar items to be added to the existing inventory over the next year was identified in this part of instrument. Data was also requested about the most commonly used location for each of the different types of equipment. Information about the inventory was important to this research since the results might support the premise that schools currently possessed a sizeable complement of audiovisual equipment which were still in widespread use as support for teacher directed instruction.

School Media Use and Patterns

This section contained the heart of the survey since the prevailing perception was that the traditional media were in a period of seriously declining use. It was imperative that the present frequency of use of traditional media by schools be compared with what it was like over the last two or three years. These are relatively subjective questions, but at the same time they are quite easily answerable by a spokesperson familiar with the day-to-day instructional patterns in the school. In identifying the sources and strategic uses of audiovisual media, participants were required to use fixed responses. Fixed responses were used for two reasons: to simplify a complex

questionnaire and to standardize the feedback thereby facilitating its analysis. A comment section at the end gave the participant an opportunity to elaborate or to qualify his/her responses.

Low-Tech Hi-Tech Comparison and Influences

In this section the frequency of use of computer technology by teachers was examined in comparison to the frequency of use of audiovisual resources.

Expectation and needs

Lastly, respondents were asked about their personal perceptions as a school representative about the direction of staff needs for professional development with respect to both the older and the newer technologies.

Generally, the survey sought to explore what the principals thought about present technological trends in the schools. The best way to obtain such information was to ask those directly connected with schools. Although survey information gathered varied in subjectivity, the surveys were made as objective as possible by careful design of the instrument.

The goal, therefore, was to get some idea of what was happening in the schools with respect to audiovisual media based on the perceptions of principals. This would provide some guidance for any agency involved in the support and improvement of education. The survey data would also provide context for discussion and decision making which was critical to providing a smooth and productive transition to a new technology.

CHAPTER 4.

Data Analysis

Overview

As previously mentioned the survey instrument was designed to collect "soft" data from which conclusions related to audiovisual utilization could be inferred. The data obtained in this survey were considered representative of the population since the questions were directed at principals. Therefore it was presumed that these voices (principals and designates) would be the most authentic ones available in analyzing the current situation as it relates to the use of audiovisual media in schools. The results then should have validity, that is, it would yield information that could be evaluated, recorded and believed. Reliability on the other hand, was determined on the basis that the survey results were internally consistent and the use of a relatively large numbers of respondents. Generally, the circumstances were set up in a way so that the survey was designed to measure what it was supposed to measure, that is, whether or not the assumptions made about the utilization of audiovisual media were supported by the perceptions of the people who know what is happening in the day-to-day life of the school.

The survey design (See Appendix I) contains fixed questions followed by a comment box for each section. This design was intended to gather sufficient subjective and objective data to provide a basis for understanding and decision making in choosing and using new technology. The primary purpose of the comment boxes was to test whether or not the perceptions of the volunteers were similar or different from those of prevailing public opinion. Using this commentary along with the fixed responses I attempted to find out what was perceived as the present trend with respect to the different technologies analyze the results, and report these findings.

Data presentation

It was my intention through the use of charts to show the commonality of responses which come from the volunteer participants of the 500 randomly selected schools. I chose to use charts as presentation tools since they are a time honoured way to represent a large collection of data and, in this case, to provide a visual comparative portrait of increases and declines in the different technologies. The first objective was to determine if there were differences in the responses of schools across the levels (elementary, junior high and high school) levels which in the survey will be referred to as Category 1, Category 2 and Category 3, respectively. In other words, the first objective was to determine if there was "one voice" among all the participants or if there were three voices. Also from analysis of the data, as a second and more important objective, I hoped to expose implications which come from the data to guide decision making with respect to the use of technology in schools.

Strategy

The responses in each fixed response category were totalled. The results were charted so that they could be easily read and understood. Then implications were drawn from these data using the context of the comments found in the comments sections at the end of each of the five sections. As noted earlier, the varying subjectivity of the responses was accommodated in degree by the fact that these are not the opinions of a few people but a large group of educators with representativeness, so the assumption here was that useful and rational information would emerge from this approach.

Interpretation

Interpretation of the data was done by weighing the perceptions of the principals who returned surveys, against the arguments and discussions found in the literature as a means for guiding inquiry and decision making in the adoption of the new technology. This process will establish a basis for making recommendations both with respect to the older technologies and to the new technologies.

Demographics

In the Spring of 1995, a total of 500 schools were randomly selected from the1647 schools in the province of Alberta using a computer generated randomizer. These selected schools were sent surveys. The general purpose of the survey was to acquire the perceptions of principals about the utilization of audiovisual equipment in their respective schools. Alberta Education (1993) had earlier conducted a similar survey with teachers related to microcomputers in Alberta Schools.

Responses were received from 203 schools (84 elementary, 63 junior high and 56 senior high), which yielded a participation rate of 40.6%. Analysis of the responses by school position indicated that 45% of the respondents were principals, 8% vice-principals, 35% librarians or teacher/librarians and 11% were teachers in the computer department, media resources and Career Technology Services (CTS). One percent of the respondents did not indicate a school position [see Appendix II]. The student population in the schools surveyed ranged from sixteen to two thousand. The number of teachers in the schools ranged from one to eighty-one.

Audiovisual Hardware and Facilities

Audivisual Inventory

In Part II of the survey the respondents were asked to indicate the numbers of audiovisual equipment held in inventory and the anticipated number of pieces of new equipment to be added within the next school year. The main findings summarized in Table 1 showed (did not indicate utilization)

that 97% of the schools surveyed possessed overhead projectors and audiotape recorders while 95% had slide projectors and film projectors. VHS recorders, 16mm film projectors and laminators were listed in about 70% of the schools. It must also be mentioned that many of the schools possessed several units of each type of audiovisual equipment as shown in Table 1.

Audiovisual Inventory in Alberta Schools	In Schools (%)	New (%)
OverHead Projectors	96.6	23.2
Classroom Cassette Player/Recorder	97	11.8
Reel to Reel Portable	23.6	2
Listening Centres	70.4	5.4
Language Lab Systems	14.3	0
CD Players	62.1	19.2
Slide projectors	95.1	3
Filmstrip projectors	94.1	3
16mm Film projectors (manual)	43.3	2.5
16Mm Film projector (auto)	78.3	2
8mm video camera/camcorder	12.8	0
Hi 8mm video camera/camcorder	1.5	0
VHS camera/camcorder	73.9	11.8
VHS-compact camera/camcorders	3	0
Beta Camera/camcorder	2.5	0
Other types of camera/camcorder	4.4	0
Laser Disc Video players	18.2	3.9
Opaque projectors	66	2
Laminators	76.4	1.5

Table 1 Inventory and Anticipated Inventory of AV equipment

Respondents, in some cases, indicated that their school planned to purchase new inventory in the next school year. The results showed that 23%

of the schools surveyed planned to acquire more overhead projectors in comparison to cassette recorders/players (12%) and CD players (19%) (See Table 1). It was important to note that there were no major disparities in the complement of audiovisual equipment held in schools inventories across the three levels except for 1293 audiotape recorders owned by Elementary schools compared to the 743 owned by Junior High schools and 615 by High schools.

Location of Audiovisual Equipment

It was presumed that constant utilization of equipment was based on the ability to easily access the equipment. So, based on that assumption respondents were asked to identify the most commonly used location (Table 2) for each type of audiovisual equipment. Analysis of the data in Table 2 indicated that 83% of the schools kept overhead projectors and audiotape recorders in classrooms, (which could be an indicator of constant use) while more than 60% of the schools identified the library as the most common location for slide projectors, filmstrip projectors and film projectors. The library was also identified as a normal location for VHS playback units for Elementary schools although the data gathered for Junior and Senior High schools disclosed VHS units as generally being located in classrooms.

Audiovisual Location	Classroom (%)	Library (%)	Office or AV Room (%)	Off-Site Access (%)
OverHead Projectors	83.7	25.1	2.0	0
Classroom Cassette Player/Recorder	78.3	30	3	0.5
CD Players	37.4	26.6	5.9	0.5
Slide projectors	26.1	67	4.4	1.5
Filmstrip projectors	36.9	60.1	3.9	1.5
16mm Film projectors (manual)	25.6	65.5	5.9	0.5
Video camera camcorders	21.7	49.8	14.3	3.9
VHS Playback units	37.9	53.7	4.9	0.5
Laser Disc Video players	11.8	8.9	1.5	3.4
Opaque projectors	8.9	49.3	7.9	3.9
Laminators	4.4	21.7	47.3	9.4

Table 2 Location of Audiovisual Equipment in the Schools

School Media Use Patterns

Sources of Media Software

In this section participants were asked to indicate the sources audiovisual software most commonly used by the school. Eight types of audiovisual media were surveyed: overhead transparencies, audiotape recordings, slides/slide programs, filmstrips, videos, films, opaque materials and compact discs. The sources for audiovisual software to be used with each media covered a range from commercially produced to student produced. It was apparent from the results that most of the traditional media software utilized in schools was commercially produced, except for overheads which were mostly teacher produced. This supports the finding that overhead projectors were the most popular item for new acquisitions in the next school year (Table 1).

Frequency of Media Use

It was noticed that schools were utilizing slides/slide programs, filmstrips and opaque projection less and less and this could be related to the availability of software (see Appendix III, Figure 1). But the results also indicated that compact discs which were generally considered newer technology were also underutilized in schools. Overheads, videos and film were still claiming large audiences according to the "often and "regularly" use categories. When asked an impression of the change in frequency of use for the audiovisual media in their schools, the results paralleled those of the frequency of use statistics. The results show a definite decline, not an exclusion, in the use of slides, filmstrips, films and opaque projection (see Appendix III, Figure 2). In contrast, overheads, audiotape recordings, and videos were 'holding steady' or 'increasing' in use (Appendix III, Figure 3). The different media of overhead projection, video, and the use of audiotape programs were considered separately as they were not yet perceived as being part of the older technology.

Strategic Uses of the Audiovisual Media

In a continued effort to understand the school media use patterns participants were asked to determine the most common way in which selected audiovisual media were used in the school setting. The respondents identified audiovisual media being used mainly in teacher centred presentations (see Appendix III, Figure 4). This reinforced the supposition that teachers are generally dependent on audiovisual media in their classroom activities.

Low tech High Tech Comparisons and Influences

Computer Influence on the Traditional Media

In this section the older and newer technologies were compared. The spokepersons were asked about the percentage of their staff who used computer resources (as an aid to teaching) more than once a week in comparison to those who used traditional media resources. The statistical footprint left by users of the older technologies was remarkably similar to that left by users of the newer technologies. Perhaps there may be many reasons associated with these similar statistical pictures, such as teachers making a distinct effort to learn the new technologies, an influx of younger teachers who are better able to assimilate the newer technologies or older teachers remaining within the comfort zone of the older technologies. Whatever the reasons, it was evident that there were as many teachers involved in using the old technologies as with the new technology. The survey showed that 75% or more members of staff use both types of media regularly (see Appendix III, Figure 6).

Mode of Use of the Technologies

In this part of the survey respondents were asked to indicate the extent of their use of selected technologies and to give their impressions about whether that use was increasing or decreasing (Appendix III, Figures 7.8). The results show that there was moderate use of most of the technologies by students and the use in computer related activity by students is holding steady or increasing.

Expectations and Needs

Professional Development

Respondents were asked to provide some feedback on the direction they felt their school school should go in the future. A three-point Likert scale was provided (see Appendix I) to help respondents rate their answers. The following table provided a snapshot summary of their responses:

Activity		Unnecessary	Desirable	Strongly Needed
Computer multimedia production	Frequency Percent	13 6.53	95 47.74	91 45.73
Audiovisual Media	Frequency Percent	24 12.37	116 59.79	54 27.84
Availability of computer software	Frequency Percent	7 3	80 40.4	111 56.6
Computer 'presentations'	Frequency Percent	14 7.22	115 59.28	65 33.51
Creative uses of audiovisual resources	Frequency Percent	13 6.57	127 64.14	58 29.29
Microcomputers to produce traditional resources	Frequency Percent	34 17.35	107 54.59	55 28.06
MIcrocomputers for record keeping	Frequency Percent	12 6.12	99 50.51	85 43.37
Availability of free audiovisual resources	Frequency Percent	8 3.98	121 60.2	32 26.45
Video production at the school level	Frequency Percent	32 16.33	129 65.82	35 17.86

Legend: U-Unnecessary; D-Desirable; SN-Strongly needed

Table 3 Expectations and Needs

Over seventy percent of respondents were in agreement that all the activities presented in the survey were either desirable or strongly needed. Thi was indicative that the majority of teachers were in favour of a blend of the technologies at this time. In the same section the spokespersons were asked

certain questions related to the introduction of computers and the decline of traditional audiovisual media. Table 5 provides a summary of the results of the respondents' personal perceptions about the effects of computers on the older media.

Question Focus	Yes	No
Computers resulted in traditional audiovisual decline	59	140
Results of Government cutbacks		
Cutbacks prevent 'new' technology from entering into schools	140	56
Cutbacks have limited effects because teachers are resources	82	111
Cutbacks force teachers to acquire personal equipment	102	89
Cutbacks further limit renewal of print and non-print resources	146	46
Cutback s causes better use of older media	119	71

Table 4 Perceived Effects of Cutbacks and Computers on the Older Media

Most respondents were in agreement that that the introduction of computer technology had not resulted in a corresponding decline in the traditional audiovisual media. Comments indicated that this was a result of making the best use of equipment and resources already acquired by the schools. It was apparent, though, that most of the respondents felt that government cutbacks were responsible for their schools being slowed with respect to jumping on the technology bandwagon. However, according to several spokespersons it had caused teachers to make better use of their existing resources.

CHAPTER 5

SUMMARY AND IMPLICATIONS

Summary

The purpose of this project was to determine whether the traditional audiovisual media which still exist in Alberta schools were still important to the curriculum development and teaching effectiveness of the school. Five hundred schools were randomly chosen to participate from a listing of approximately 1665 schools in Alberta. The return rate was 40.6 percent with 203 schools comprising the volunteer sample. This stratified volunteer sample represented approximately 13% of Alberta schools across three institutional levels of elementary, junior high and high school.

This particular survey was designed to parallel a similar survey done by Alberta Education on Microcomputers in Alberta Schools (1993). This survey asked questions about the status and use of older forms of technology which were not addressed by the previous government survey and consisted of four parts in which school principals (or designates) were required to provide their opinion about patterns of technology use taking place in their school. Most of the results were portrayed with bar graphs and tables to summarize the extensive data compiled by the survey. This compilation was used to obtain a

sense of the relative impact of computer technology and its effect on the older technology.

The survey also provided opportunity for respondents' clarification and comment. An analysis of this commentary showed that most respondents felt that there was a need for the introduction of the newer technology in the schools. Some respondents cited that business needed students who were computer literate as a prerequisite for finding jobs and it was necessary that schools help to meet that demand. Others wrote of their technology plan and the desire for their school to be a relevant part of the twenty-first century.

There were also comments about the ability to maintain the older forms of media. While many of the respondents stated that both technologies were widely used and felt that the older media were still used consistently in support of the curriculum, there was the constant reminder that most of the existing media was either "old" or "aging" and replacement parts were difficult to obtain (see Appendix IV).

However, the major purpose of this survey was to determine whether the older forms of media were still being utilized by teachers and students. Review of the literature indicated that there has been almost no research activity since 1985 with respect to low tech in educational institutions or (schools). Although the Japan Audio-Visual Education Association conducts regular surveys at three-year intervals to assess the state of audiovisual education facilities (Japan Audio-Visual Education Association, 1993), what was noticeable within the existing literature was that teachers as a whole do not often use media; and the simpler the medium the more likely it would be used

(Seidman, 1986).

Based on the analysis of the data obtained it was seen that many schools depended on their existing traditional media despite their desire for transition into the high technology domain. More than 70% of Alberta schools had a sizeable inventory of traditional audiovisual media which were central to teacher presentations. One of the assumptions which seemed to be prevalent in education that the new technology had effectively eradicated the older technologies, was refuted by the survey because perceptions of the majority of the respondents indicated that there was still presence of the old media. The results also showed that low tech and high tech coexisted comfortably and are used on a regular basis in Alberta classrooms. In more than half of the schools surveyed it was reported that 75% or more of the schools used audiovisual traditional technology as often as they used computer technology.

It was evident from the survey results that there had been a decline in the use of reel-to-reel tapes, filmstrips and opaque media, but the overall data indicated that teachers continued to use low tech media in ways that made them play a significant role in teaching and learning. In fact, there were some respondents that felt that the older media were in state of growth rather than a decline.

In essence, there were four main generalizations which emerged from the survey :

1. Teachers were still dependent upon traditional media for enhancement of classroom instruction.
2. To date the influx of computers have had limited effect on the use

of traditional media by schools.

3. Use of traditional media was on the decline not because of computers but because of maintenance and availability of software or resource support.
4. Computers were regarded as an alternative medium, not as a replacement one.

Implications

There are benefits to be derived from an integrated approach using the different forms (low and high tech) of media. Firstly, it alerts teachers to the fact that media (in any form) is intended as a tool for enrichment and remediation and that there are many available options of media resources. Secondly, the philosophical and pedagogical ramifications of the technological transition can be effectively harnessed, such as developing appropriate models and technological goals or statements for a dynamic learning environment as well as a learning environment which recognizes the realities during the changeover time. Lastly, with a more conservative approach, it may save the overall quality of instruction from being eroded by over-enthusiastic high technology users such as those Ragsdale (1988, p. 11) characterized as individuals who, " not only urge the use of computers in impractical ways, but also imply that the ultimate effects of these applications can only be predicted on the basis of very restricted vision."

Post-secondary institutions, particularly those responsible for teacher education, should continue to foster instructional modules which would help

the student teacher integrate some forms of the traditional media into their technological resource repertoire. This would serve well in schools where high-tech media was not yet available, and would help increase the availability of the resource pool in schools which were technologically advanced. Presently the attitudes of the post secondary institutions appears to be one which would be better characterized as "revolution" rather than "evolution". A seeming state of war has been tactically declared on the old media to ensure its elimination. It is my contention and recommendation that this time period the emphasis should be on transition which promotes diffusion and integration of both forms of media.

The results of this survey are also consistent with what Cuban (1986, p. 4) had stated;

> What I define as useful instructional technology, then is any device available to teachers for use instructing students in a more efficient and stimulating manner than the sole use of the teacher's voice.

This study provides support for continued development, inservicing and instruction for teachers in the area of changes in educational technology.

Presentations are the hallmark of the old media. Presentations are characteristic of films and commercial video programs as well as many other media. Presentations provide a common experience for learners which is generally used as a foundation for individual activity by the learner. There is still a viable and important place for presentation aspect of teaching and learning and this outcome is in evidence taken from the study particularly in the comments.

The reality sketched by the study confirms the situation which is

suggested by the literature that the push for technology is fuelled by behavior and opinion which tends to be faddish in nature. There are "beliefs" that imply that education is in the dark ages by comparison to business and industry and that we need to act now or fall hopelessly behind. These "beliefs" and a host of other assertions that tend to move educators toward impulse based change are undisputed but are not justified. The schools have not even started to address the technological revolution from the perspective of impulse based change. The schools are conservative in their approach to technology out of necessity and also in my opinion to their good fortune.

As suggested earlier, I contend that the introduction of computers (and their peripherals) in schools was based largely on the assumption and promise created by business that computers could "do it all". Computer companies, such as Apple, which used education as an advertising opportunity exploiting the picture of "concerned citizens" have attempted to thrust the educational system into the "change quickly or don't survive" ethic. The result was little or no interest in the reasons for the failures of the older technologies, just the notion that there had been a paradigm shift in technology and that the older technologies were been replaced or should be replaced as quickly as possibly by newer forms of technology. On the contrary, findings from the survey show that respondents thought differently. When asked if the introduction of computers has resulted in the declining use of traditional media, most disagreed.

There is also the matter of cost. Computers, printers, digital cameras, modems and other high-tech items are typically what is thought of when there

is reference to 'new' technology, and many of the respondents felt that government cutbacks were partially responsible for their school's inability to acquire "new" technology. Herein lies the problem. The hardware only represents the tip of the iceberg. Kerr and Westbrook (1996, p. 49) wrote:

> ....more expensive than the actual hardware itself is likely to be the new infrastructure required to support it....also even more important is the need to regularly maintain and upgrade this new and much more sophisticated technological infrastructure for learning.

Therefore it is also my recommendation that schools conduct feasibility studies which directly address the costs as well as the curricular purposes before jumping on the high-tech bandwagon. In the past older technology was acquired without stretching the budget in dramatic and unusual ways. This approach should also work with newer technologies[12], but not if every educational institution insists on being "cutting edge". Other factors to be considered when preparing a technology budget should include student-related equity issues, commitment to the ongoing replacement and upgrading of technology, creation of a dynamic learning environment and a commitment to continued teacher inservice.

In conclusion, assuming that computer technology is becoming an integral part of students and teachers lives, I recommend that it should be introduced slowly and in a much more considerate way than it has been up to the present time especially in post-secondary institutions dedicated to teacher

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12 Author's note: It must be taken into consideration that computers can do more, and perhaps as a result cost considerably more. However the point of contention is that presently it cost most schools too much to support a computer environment. Support usually comes from diverting monies from other educational programs.

education. The "wait and see" approach may appear to be a mediocre way to enter the twenty-first century, but it helps to avoid unnecessarily large expenditures and provides the time required to plan the transition.

For education to be truly effective, students must identify with the need to participate in the world of ideas, and teachers must be aware that any form of media can be used to help students go beyond the visual and the auditory experience. In the words of Adams and Hamm (1989. p. 34)

> If a technology is not well understood, there is a tendency to either overstate its possibilities or dismiss its promise. Exaggerations in either direction can kill an instructional tool before it has a chance to develop.

This caution may be especially important in the introduction of newer high technologies. Rapid conversions to technologically influenced curriculum in the name of "instructional excellence" without understanding the failures of the older technologies will in my opinion only continue the practice of "throwing out the old with the haste of bringing in the new." Adams and Hamm (1989, p. 34) remind us of what should be important in our consideration of the rightful role of any technology, new or old, in teaching.

> There are always the unintended side effects to technological and educational progress. The present onslaught of computers and video devices sets forth an avoidable, if ambiguous, new agenda for teaching, learning, and extending human minds. For media to assist in the process of revitalizing schools, at least as much attention must be given to instructional content as to creating learning environments.

Appendix I

The Survey Instrument

Technology in Alberta Schools

Part I Demographics

Your Name:

Your School Position:

School Name:

School Address:

School Phone: Fax:

Number of Certified Teachers (not Counting ECS)

Number of ECS Staff

Number of Students Enrolled (ECS-12)

Enrolment by Grades

ECS	1	2	3	4	5	6	7	8	9	10	11	12

Please complete this survey and return to your district office

Questions should be addressed to

Lou Ganske
Faculty of Education
The University of Lethbridge
Lethbridge, Alberta
T1K 3M4

Phone: 329-2450
Fax: 329-2252

Schools with Special Circumstances:
In some situations such as Hutterite Colony Schools the use of technology is not permitted. If your school is one of these 'special cases' please do not complete the form..

Part II Audiovisual Hardware and Facilities

Audiovisual Inventory

Please indicate the numbers held in the school inventory for each item of audiovisual equipment in one column and the anticipated numbers of new items in the second column.

		Total Number on June 30	New items to be added in next school year
Overhead Projectors			
Audiotape Recorders			
Classroom Cassette Player/Recorder			
Reel to Reel Portable			
Listening Centres (stand-alone or built-into tape recorder)			
Language Lab System			
CD Players			
Slide Projectors			
Filmstrip Projectors			
Film Projectors (16mm)	manual thread		
	automatic load		
Video Equipment			
Video Cameras or Camcorders			
8mm format			
Hi 8mm format			
VHS format			
VHS-C format			
Beta format			
Other format			
Playback Monitor Sizes			
13" or under			
14"-19"			
20" or over			

Technology in Alberta Schools 3

Laser Disc Video Players		
Opaque Projectors		
Laminators		

Please indicate the kind of overhead transparency making facilities at your school by checking in the appropriate boxes below:

	Yes	No
B & W Photocopy Transparencies		
Colour Photocopy Transparencies		
Thermal Transparencies		
Other		

Location of Audiovisual Media

Please check the ***most commonly used location*** for each of the following types of audiovisual equipment

	Decentralized (to classrooms)	Library or AV Storage	Office or AV Production Room	Off-Site Access (Divisional Office)
Overhead Projectors				
Tape Recorders				
CD Players				
Slide Projectors				
Filmstrip Projectors				
Film Projectors				
Video Cameras/Corders				
Video Playback Units				
Laser Disc Players				
Laminators				
Opaque Projectors				

Part II Audiovisual Hardware and Facilities

Clarification/Elaboration/Comments Opportunity...

Technology in Alberta Schools 5

Part III School Media Use Patterns

Sources of Media Software

Please rank (where possible) the following sources of audiovisual resources for your school using the following scale:

'0' so seldom used that this source is negligible
'1' most common source of these materials
'2' second most common source
'3 ', '4', etc. other sources of materials

	Commercially Produced	District/ School/ Educational Agency/ Produced	Teacher Produced	Student Produced
OverheadTransparencies				
Audiotape Recordings				
Slides/Slide Programs				
Filmstrips				

	Video Rentals	Recorded from Commercial Television	Public Library	District/ Divisional/ Regional/ Library	Free or 'Sponsored' Videos	National Film Board	Teacher Produced	Student Produced
Videos								

	Do Not Use Films	In-School Collection	Public Library	District/ Divisional/ Regional/ Library	Free or 'Sponsored' Films	National Film Board
Films						

	Do Not Use Opaque	Use Opaque for Enlarging Visuals	Teacher Produced Presentations	Student Produced Presentations
Opaque				

	Do Not Use CD's	Commercially Produced	Public Library	Other
CD's				

Technology in Alberta Schools 6

Part III School Media Use Patterns

Frequency of Media Use

Please estimate the frequency of the audiovisual media use in your school by checking one of the four options listed by each one.

	Often	Regularly	Occasionally	Seldom
OverheadTransparencies				
Audiotape Recordings				
CD's				
Slide/Slide Programs				
Filmstrips				
Films				
Videos				
Opaque Projector				

'Change in Use' Patterns

Please give your impression of the change in frequency of use for the audiovisual media by checking the box which best describes what is happening at your school. Think in terms of the last two or three year period of time in making this estimation.

	Increasing	Holding Steady	Declining
OverheadTransparencies			
Audiotape Recordings			
CD's			
Slide/Slide Programs			
Filmstrips			
Films			
Videos(acquired programs)			
Videos(teacher/student productions)			
Opaque Projector			

Technology in Alberta Schools 7

Part III School Media Use Patterns

Strategic Uses of The Audiovisual Media

Please make an effort to determine the ***most common*** way in which each of the audiovisual media are used and check in the most appropriate box.

	Teacher Centred Presentations	Student Centred (Research/ Reporting)	Both Teacher **And** Student Centred	Too Little Used To Make A Determination
OverheadTransparencies				
Audiotape Recordings				
Slide/Slide Programs				
Filmstrips				
Films				
Videos				
Opaque Projector				

Part III School Media Use Patterns

Clarification/Elaboration/Comments Opportunity...

Technology in Alberta Schools 8

Part IV Lo-Tech Hi-Tech Comparisons and Influences

Computer Influence on the Traditional Media

In this section an attempt is made to gain a broad picture of the use of technology (both hi tech and lo tech) at your school. Please give your 'general impression' when you respond to each question by checking in the most appropriate box.

Audiovisual resources are used in our school ...

Frequently	Regularly	Ocassionally	Seldom	Never
☐	☐	☐	☐	☐

Computer resources are used in our school ...

Frequently	Regularly	Ocassionally	Seldom	Never
☐	☐	☐	☐	☐

The extent of teachers on staff using microcomputers regularly (once a week or more often ...

75% of staff or higher	50-75%	25%-50%	25% or less
☐	☐	☐	☐

The extent of teachers on staff using audiovisual resources regularly (once a week or more often)....

75% of staff or higher	50-75%	25%-50%	25% or less
☐	☐	☐	☐

Mode of Use of the Technologies

Please estimate the mode of use of technology with students in the classroom on the basis of the extent of use and give your impression about whether that type of use is increasing, holding steady, or decreasing for the following forms of technology.

	Heavy Use	Moderate Use	Light Use	No Use	Increasing	Holding Steady	Decreasing
Word Processing	☐	☐	☐	☐	☐	☐	☐
Spreadsheets	☐	☐	☐	☐	☐	☐	☐
Computer Games (instructional)	☐	☐	☐	☐	☐	☐	☐

Technology in Alberta Schools 9

Mode of Use of the Technologies (con't)

	Heavy Use	Moderate Use	Light Use	No Use	Increasing	Holding Steady	Decreasing
Computer Literacy Instruction	☐	☐	☐	☐	☐	☐	☐
Programming (LOGO, BASIC, etc)	☐	☐	☐	☐	☐	☐	☐
Telecommunications	☐	☐	☐	☐	☐	☐	☐
Overhead Trans	☐	☐	☐	☐			
Audio Programs	☐	☐	☐	☐			
Video Production by Teachers & Students	☐	☐	☐	☐	☐	☐	☐
Using Available Video Programs	☐	☐	☐	☐	☐	☐	☐
Films	☐	☐	☐	☐			
Filmstrips	☐	☐	☐	☐			
Slides	☐	☐	☐	☐			

Part IV Lo Tech Hi Tech Comparisons and Influences

Clarification/Elaboration/Comments Opportunity...

Part V Expectations and Needs

Professional Development

In this section please try to provide information about the direction you feel that schools need to go in the near future in responding to needs for professional development activity. Again, please answer on the basis of general impression that you feel is representative of the school climate at your school.

Please rate the following professional development activities using the following scale:

'0' unnecessary
'1' desirable
'2' strongly needed

use/production of computer multimedia programs	☐	creative uses of audiovisual resources	☐
sources and availability of audiovisual media	☐	using microcomputers to produce traditional resources such as overhead transparencies, bulletin boards, etc.	☐
school-based applications of telecommunications	☐	Using microcomputers for recordkeeping—grade books, anecdotal records, etc.	☐
availability of computer software	☐	Free and inexpensive audiovisual resources available to schools	☐
Computer 'presentations'	☐	Video production at the school level	☐

Please indicate any other professional development needs which you would see as 'strongly needed' at your school:

1. _____
2. _____
3. _____

Technology in Alberta Schools 11

Part V Expectations and Needs

Based on your personal perceptions would you say that the introduction and use of computer technology in the schools has resulted in a corresponding decline in the use of the more traditional audiovisual media?

Yes ☐ No ☐

What effect do you feel government cutbacks have had or will have on computer technology and on traditional technology?

	Yes	No
Preventing 'cutting edge' technology from finding its way into the schools ...	☐	☐
Limited effect because schools rely mainly on teachers as human resources ...	☐	☐
Forcing teachers and principals to rely on buying their own equipment and using it 'behind the scenes'	☐	☐
Further limiting the renewal of non-print resources and print resources acquired by the school.	☐	☐
Making better use of older audiovisual technologies since it is already in place and available without much further expenditure.	☐	☐

Other Effects:

Part V Expectations and Needs
Clarification/Elaboration/Comments Opportunity...

Appendix II

Breakdown of People Completing Survey Form

Demographics

	Elementary C-1	Junior High C-2	Senior High C-3
School Positions	**Nos**	**Nos**	**Nos**
Principal	37	28	20
Vice -principal	8	2	4
Acting Principal	-	1	-
Associate Principal	-	-	2
Principal/Librarian	-	-	3
Teacher/Principal	2	1	-
Assistant Director	1	-	-
Curriculum Coordinator	2	2	-
Dean	-	-	1
Librarian/Librarian Aide	14	17	12
Teacher/Librarian	13	6	9
Teacher	5 (grades 5-6)	6*	4#
No Name/Position	2	-	1
Total	84	63	56

Legend * Teachers = CORE (1), Technical coordinators (3) and Computer teachers (2)
Teachers =counsellor (1), AV coordinator (1), Dept. Head(1), Media Resources (1)

Appendix III

Figures Showing the Extent and Nature of Media Use

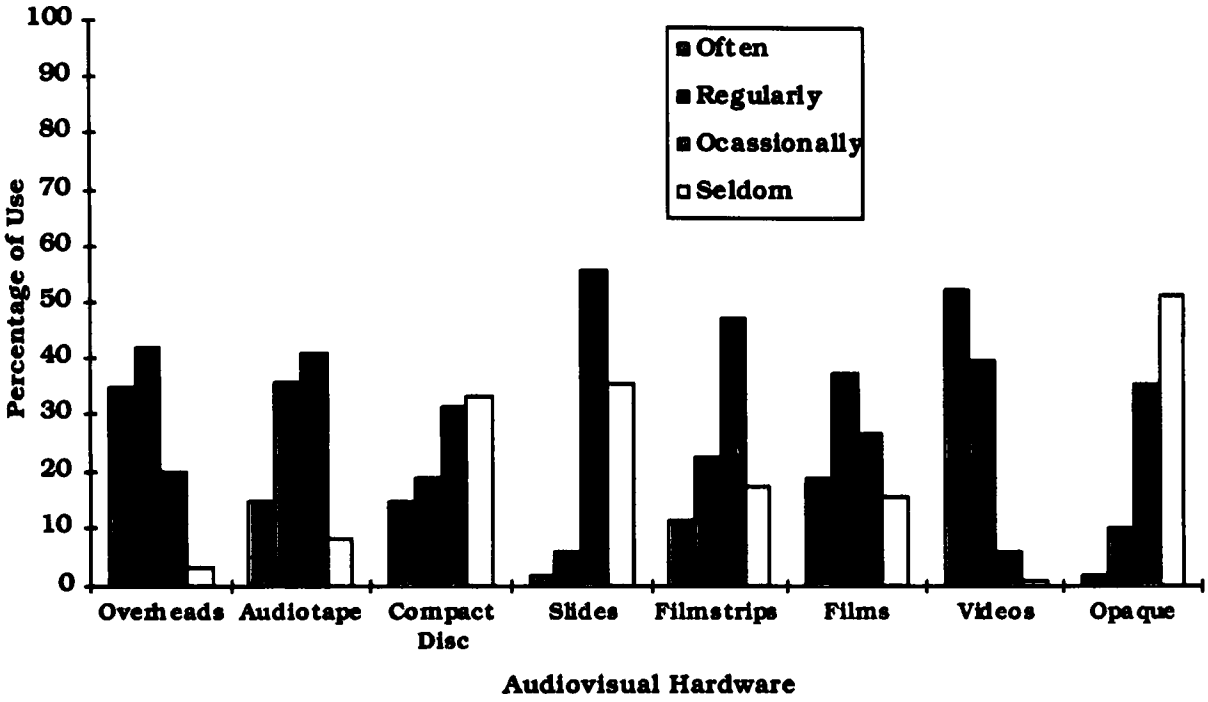

Figure 1. Frequency of Media Use

Note: Often refers to use on a daily basis
Regularly refers to use on a weekly basis
Occasionally refers to use once/twice a month
Seldom refers to use once/twice in six months to a year

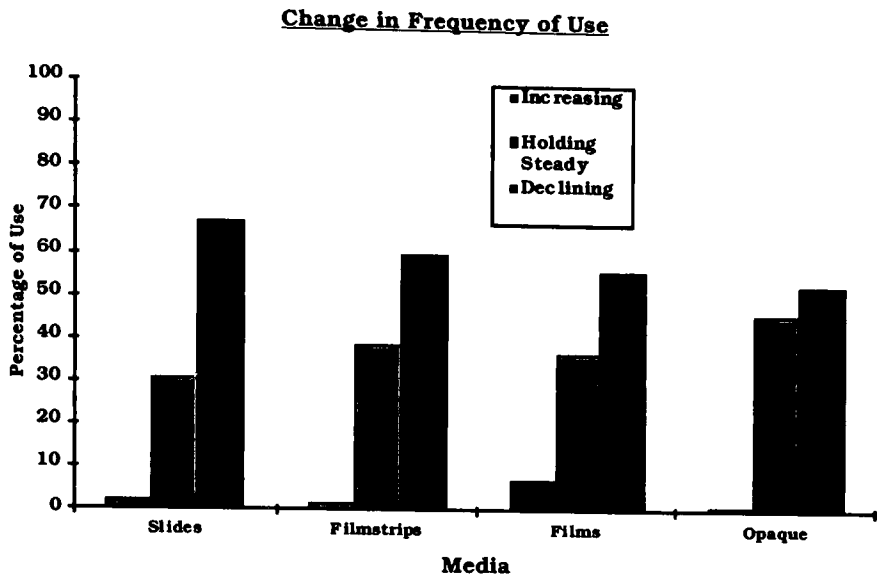

Figure 2. Change in Frequency of Use for forms of Media used occassionally in classroom instruction

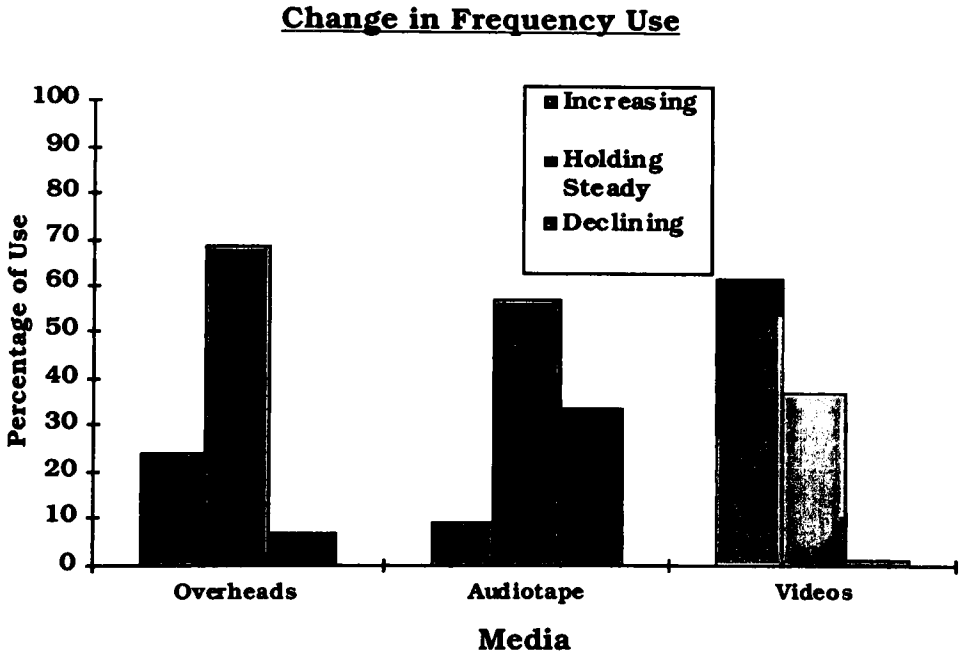

Figure 3. Change in Frequency of Use for forms of Media used often in classroom instruction

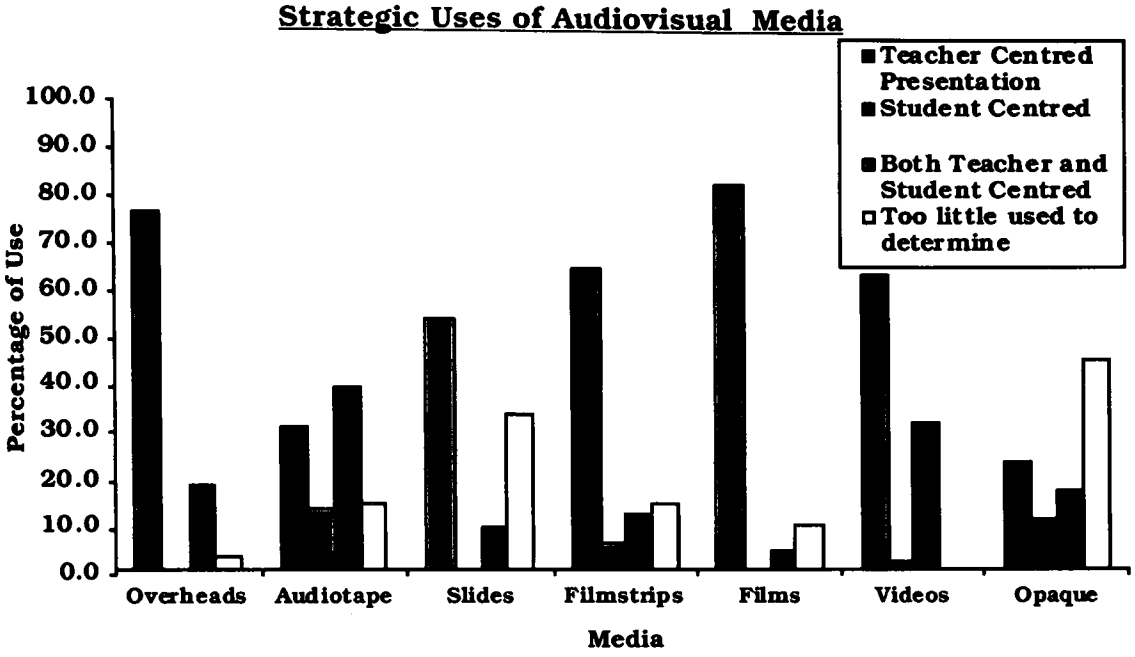

Figure 4. Strategic Uses of Audiovisual Media in the School setting

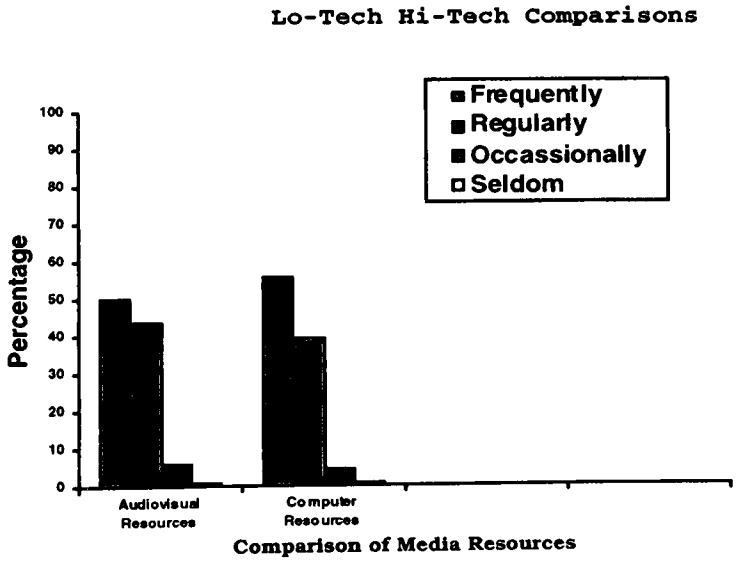

Figure 5. Comparison of Use as an aid to Teaching

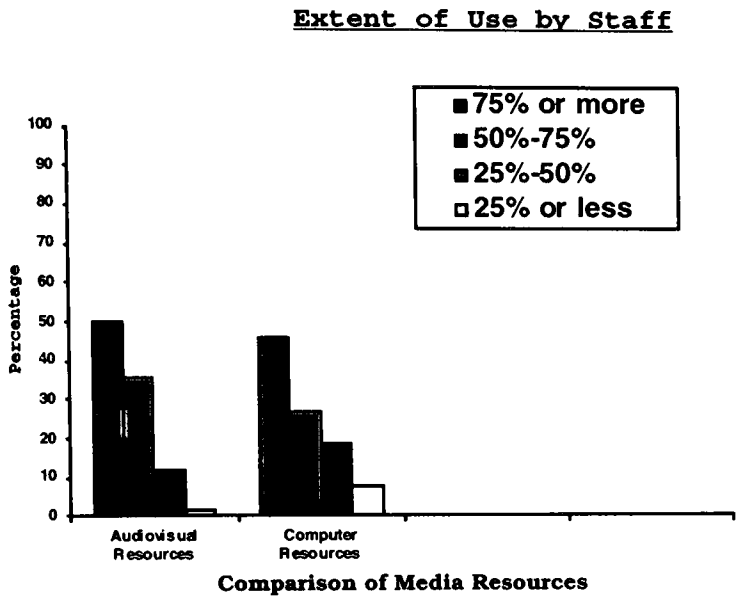

Figure 6. General Use of the Technologies by Staff

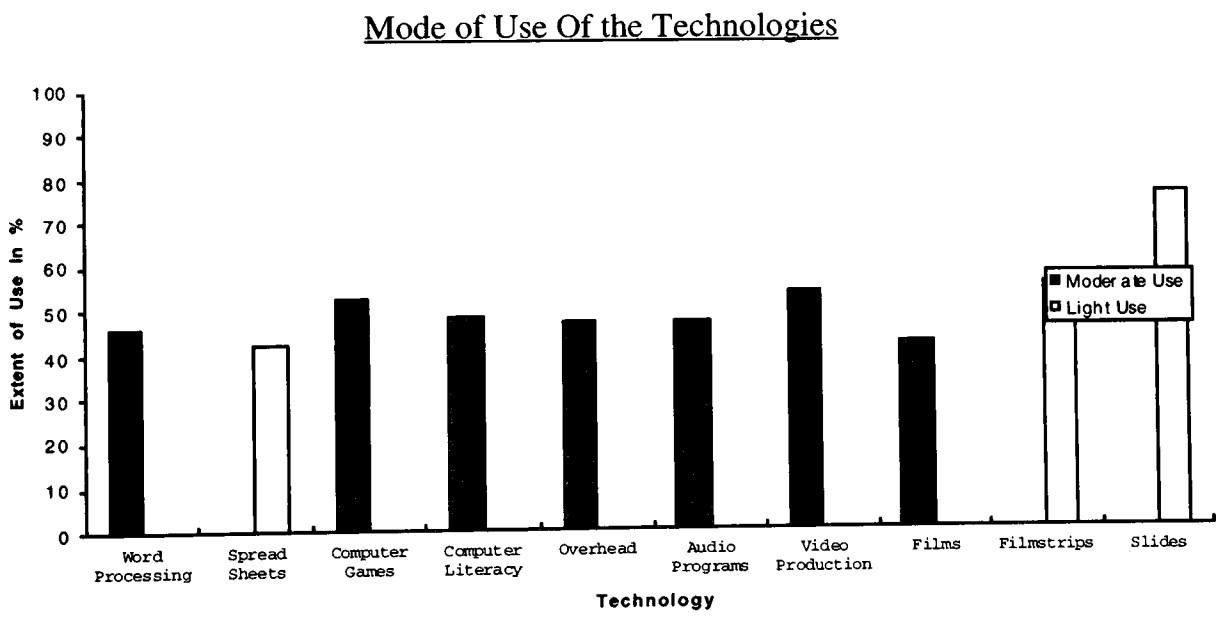

Figure 7. Mode of Use of the Technologies

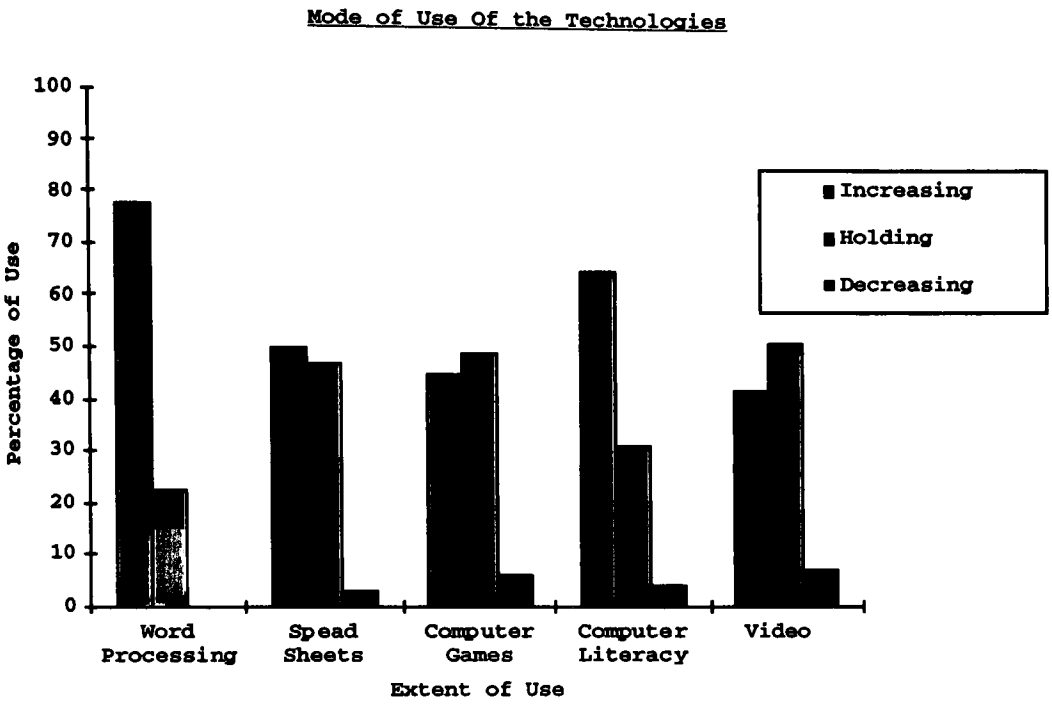

Figure 8. Extent of Use of the Technologies

Appendix IV

Comment Typescripts From the Survey

Category 1		
School #	Page #	Survey Comments
1110	11	1. With the "cuts" - schools will continue to run old technology rather than replace it - a real problem in the future! $ for repairs will increase! 2. $ are needed to replace old technology (i.e. Apple IIe's in our school). Otherwise we will move ahead slowly!
1147	4	Although we have a lot of tape recorder/listening center units they are never all working at the same time. These machines take a lot of abuse! Although we have a slide projector - several individual filmstrip viewers, they are seldom/never used. Our VCR is large - cumbersome and used infrequently.
	7	Overheads are being used instead of blackboards in many cases. Thus their use is increasing.
	9	Upper elementary students do a lot of assingments on the computer - word processing is the main use at this level. Primary students make the most use of games. We have Apple 2E's and a few Mac's.
	11	Computer use - decline in other audio-visual are not linked. Perhaps video -- CDRom may play a role in displacing other av forms. The computer and av are not used for the same purpose.
1404	4	There are 3 CD Rom stations, networked; lib rary and printer (colour). There 3 Apple computers and 2 printers; library.
	7	Amalgamation of our school divisions has resulted in declining use of I.M.C. audio-visual materials: not as accessible, due to once a week deliveries only; not as convenient for teachers to select materials.
	9	16mm films no longer available from Regional Film Library.
2218	11	Huge need for technology (computers, modems, printers, etc.) in Elementary Schools!!
2602	4	Our shrinking budget and the prices of audiovisual hardware make it hard to look at replacement or additional items.
2974	4	Slides, filmstrips and films are getting dated. New material are mostly on video.
3334	9	School is about to move into a technology plan. The objective will be to purchase a Mac lab of 15 - 20 machines, access to Internet and more movement into CD Roms. Prior to this year - we were limited to Apple IIE's and 1 CD Rom. We will move heavily into a research (library based) technology plan with a student research lab near by.
	11	Cut backs will have an effect on purchase of new equipment. Library sources will see a lessening of purchases over the next few years.

Category 1		
School #	Page #	Survey Comments
4445	9	We have no facility for telecommunications at the present for our students. E-mail is in use through the office within our district.
	11	It is not possible to make better use of older AV technology such as filmstrips and films when the equipment breaks down and can no longer be repaired because parts are obsolete.
5216	4	We have a shortage of all AV equipment because the school has grown in population in such a short time.
	7	All media are widely used and very valuable to our students and staff.
	9	Both technologies are widely used at this time. We could use more of each.
	11	1. There will be a total lack of resources, traditional and computer technology. 2. Basic technology beyond schools has already been set in place by the business world. Our students need this education just to survive in this computer and technology age.
5230	11	School based management. Should ensure flexibility and right to establish technology as a priority.
5303	4	Most tape recorders stay in classrooms all year round but are controlled from the library.
	7	We have purchased many commercial videos (legal) that stay in our library. I was not clear where to mark them. What do you mean by CDs? CD/s- music CD-Rom for computer
	9	Audio programs have moderate use with books and filmstrips. Audio alone has very limited to no use.
	11	Production of multimedia programs is coming. Since we just received a new lab we can't do everything at once. Strongly needed means - next priority.
6407	11	Rural schools and smaller regions will suffer the greatest effects of cutbacks.
6607	9	Three staff members are part of our "Technology and Instruction" committee which meets regularly. We have applied for an internship project to give them further opportunities in this area.

Category 1		
School #	Page #	Survey Comments
6853	4	Our system has a very efficient IMC for distribution of programs. Replacement of AV equipment done without problem at this time.
	9	School system implementing Ed Tech Project. Computer we should increase dramatically with the PD and programs coming into the schools - 4 computers in each room with central file server for school. IBM eduquest materials purchased.
	11	Despite the cutbacks our school system is forging ahead with Ed Tech in Gr 1-6.
7109	4	We are desperately out of date in regard to equipment.
7223	7	1. Audio cassettes with read along books are getting more popular in our school for use with ESL students and poor readers. 2. Film use is decreasing due to the gradual phasing out of the district media loan centre. 3. We do not use CD's as we have no player. However we use CD Roms extensively in the library and computer lab.
	9	French programs use tapes heavily but the rest of the school is not a heavy user therefore its average use is light.
	11	1. Reducing the number of computer literate teachers on staff because of cutbacks, seniority and free time outside the core curriculum. 2. The experience in our schools has been to cut back on supplies and technology in order to keep teachers and have reasonable sized classes.
8013	9	There is more use of the CD-Rom on the computer as a learning station (ie. Encyclopedia programs).
	11	Funding allocated for other programs are rerouted to computer costs. This includes monies raised by school community.
8551	7	Over the past two years the use of videos and overhead transparencies has doubled.
	11	Will prevent our school from upgrading our computers. I'm sure other schools will also be left behind in the computer and telecommunications fields; which is the key to the future.
9216	11	Students with access to computers at home are in advantaged positions compared to students with no or limited access either at home or school.

Category 1		
School #	Page #	Survey Comments
9303	7	The ease of use of videos - quality such as color and motion - make them much more used than films (where you have a dark room and fiddle with an unfamiliar machine) or filmstrips (where you have no motion) or slides (no motion, unfamiliar machines) CD-Roms on computers are also becoming very popular multi-media use - for infromation for research.
	11	Lack of funds for updating programs and computers.
9329	4	Would like to plan for a CD player, laser videodisk, and 13" video playback recorders - dependent on fund rasing. Most funding now going into computers.
	7	Students and teachers using new technologies more - computers, video camera, etc.
	11	Cutting of staff necessary to implement technologies - eg. computer people, media specialists, librarians.
9334	4	Our audiovisual equipment is either "old" or "aging". We are unable to replace worn equipment - consequently our machines make many trips to electronics - service cost of $30 per hour. We are barely keeping afloat.
	7	Will we ever have a camcorder so students can produce their own videos?? The PTC help as best they can but there are so many demands on the extra funds they raise. We need new tape recorders - the record function will not work on so many machines. How about a CD player? We feel we are increasingly becoming "technology dinosaurs" as we work with worn, dilapidated tools - meanwhile in the REAL world... will our students be prepared for 2000 and beyond?? No!
	11	Not keeping up to date with real world technology. Students see either TV or have in their own homes.
9356	9	Computer lab is used to maximum. Students are heavily engaged in hypermedia production. Insufficient number of computers to allow greater use.
	11	Students respond to digital technology and manipulation of multi mediums are possible at a child level. This is a must for development. Virtual reality and in-school bulletin boards are expensive but powerful curricular tools.
9371	11	1. The students who have state of the art computers in there homes will continue to become more literate than those without the opportunities and equipment. To this latter group, we diminish their future prospects by the lack of preparation for their future. They are not empowered to the same degree as those who have. Thus we create inequities in our public education system; we keep the working classes as unskilled in the work force, and those who have computer literacy will be the leaders of the 21st Century. Nice prospects for the "have nots"!

Category 1		
School #	Page #	Survey Comments
		2. Needs: 1) equitable access to technology, 2) onsite personnel to train and bridge the transitional period of learning for teachersand students, 3) fundraising or gov't $$$ required, 4) system standards for hardware recommendations, 5) onsite licenses to allow for numbers using software.
9374	4	You have not asked about age or condition (thank goodness) but these factors should be taken into consideration.
9383	11	Computer will not be repaired, up graded or replaced.

Category 2		
School #	Page #	Survey Comments
1176	4	This is my first year as a librarian, so some of my estimations on inclining/declining use of AV equipment may be off.
1848	4	Recordplayers- 12 VHS player/recorder- 4
	7	Filmstrips are becoming DATED. "CAMS" is going out of the film (16mm) materials in favour of VIDEO format.
	11	As technology purchased in the 1980's becomes obsolete, and breaks down from use, the gov't cutbacks make it almost impossible to stay current, much less expanding into new technologies.
2210	4	We have a Media Retrieval Centre that houses our VCR's so that they do not have to be transported to individual classrooms. The tape is put into the VCR, using the phone and codes the VCR is 'keyed' to a particular classroom and the teacher then 'operates' the machine using his/her phone. (Each classroom has a television monitor and a telephone.) The Centre also governs the 'bell times' for the school. The TV monitors in the hallways give school announcements at various times throughout the day. The Centre also houses our main server for the school's computer network. (The MRC is located in the library.)
2290	4	Equipment is moved from classroom to classroom as the need arises on a sign-out (first come/ first served) basis.
2514	4	2 cassette decks part of a ghettoblaster. Our filmstrip projectors are a filmstrip, cassette combination - Dukane VP-matic (3) - Dukane (7) We also have 6 simple fimstrip viewers. Why didn't you ask how many TV's and record players?
	7	Our school doesn't have a CD player, but teachers and students bring in their own.
2589	9	Data Base - Light use Holding steady.
	11	Slowed down progress.
2985	4	The new laminator will replace a very old one so there will be only one laminator in the school in June '95.
2994	11	If anything, I believe computer technology will become a main focus in the schools and will eventually displace much of the traditional technology.
4571	11	I feel that there will not be uniformity in what equipment will be available to different schools, because of the wide range of funds available. Some districts will be much better off (better equipment) as opposed to poorer districts who cannot afford the same advanced equipment.

Category 2		
School #	**Page #**	**Survey Comments**
5229	7	We are finding that teachers using overheads more because of the expense of photocopying.
	11	16mm & slides although already in place can be outdated and are expensive to produce... what is older?
6483	4	We have a complete system called a ROLAND TELECENTER 5. TV in every classroom, phone in every classroom & access to cable in every classroom.
	9	We have a networked computer in every classroom and a fully networked computer lot.
6443	4	Ghettoblasters not included, some in classrooms and some in the library.
	7	Opaque projectors used very little.
	9	Although students use of computers in the school may be limited to computer classes, the use of computers for word processing and graphs is increasing by leaps and bounds as many families have provided computers at home. (with CD Rom and good encyclopedia software, etc.) Many students hand in work done on the computer.
	11	1. the cutbacks have other effects i.e. larger classes, more teacher responsibilities, less teacher time to pursue computer technology and its positive possibilities. 2. Seems not to fit. Does not seem parallel to other questions in this section.
7503	4	We have 2 CD-ROM players in the library, and they are used a great deal.
7531	9	Although there is light use of computer programs in the classroom, many students have access to a computer at home, and use such programs for homework assignments.
	11	I have not seen a decline in the use of AV media such as videos and overhead transparencies yet, but I would expect to do so if and when we have more computers in our school, and particularly, in our classrooms. At present, all our computers are in one place - the computer room - and only one or two find their way on a temporary basis to a classroom. I don't know whether I can say there will be better use of older AV technologies, but it will certainly continue to be used instead of moving on to computer technology very quickly, because of lack of money.
7534	4	Our playback monitors are set up as units with a TV and a VCR. CD players are CD ROMS.
	11	No direct funding in place to ensure schools all have equal access to computer technology, Hardware/ Software.
7563	11	Trouble is the old stuff is falling apart.

Category 2		
School #	Page #	Survey Comments
7570	4	We have a media retrieval system in the library that services the whole school. We do have a few stand alone VCR-TV sets.
	9	We are a new school - 5yrs. old with 100 student computers. All students have two periods per week in computer option.
7904	4	Overheads are in popular demand and sometimes hard to find. We still use film projectors, although there is a trend to VCR's.
8230	4	Because of the rapid changes in tehnology and the overall cost of hardware and software; schools find it very difficult to go beyond the basis. If technology is going to an expectation in schools then it needs to be supported financially without funding it will amount to nothing more than keyboarding and word processing.
9346	4	We still use our old TV's as monitors, even though the color is poor. Included in this inventory are 2 video recorders which are broken, 1 which is 3/4". Also, one of our cameras is rarely used as it has to be connected to the recorder.
	9	Our computer lab recently upgraded to 286 P.C.'s. Every classroom now has 1-3 Apples (which used to be in the lab). We have very limited space for video production.
9610	11	Already using old tech to max. Kids won't touch something older than they have at home.
9625	4	We are a dual location library school. This means we have two libraries in one school. (Primary library & Division II/III library) The primary library keeps most of their technology in the library. The Division II/III library keeps their audiovisual equipment in an AIV room and some classrooms.
	7	We are moving into more student use of videos but still limited teacher expertise. Through the library's research program there is an emphasis on trying to get students to share research in varied formats. (other than written presentations)
	9	Our division III has an extensive computer (IBM) network lab. Constant use by Division III option classes leaves little time for others. Older Apple lab for Division II/III needs upgrading and plans are for the near future to do so. Library has CD ROM stations and integrated media system. (Cataloguing management and telecommunications)
	11	1. Cutbacks have put technology leadership at risk in schools. Primarily Teacher- librarians who have implemented technology use acress the curriculum through cooperative planning and teaching.

Category 2		
School #	Page #	Survey Comments
		2. There needs to be leadership in technology implementation. Teacher- librarian are being put back into the classroom therefore no longer providing leadership for the Technology Plans in the school. Specialists are at risk and no longer available to assist staff in-servicing on site.

Category 3		
School #	Page #	Survey Comments
1101	11	Will limit but not prevent purchase of technology - smaller quantities.
1202	7	We do not order directly from the National Film Board for video rental because of the cost.
1306	7	Video is fast taking over for slides/ films/ strips. CD's are on the increase.
	9	There would be heavier use of the first three, but we don't have the money for the equipment.
	11	If we are to compete globally we will have to keep up with technology.
1802	11	Much effort in the educational department is needed to convince teachers that computers are an excellent way to teach children both through class instruction and play.
2301	4	We have moved VCR's/ TV's to classrooms/ departments from a central location - less hassle with bookings/ availability.
	7	Transparencies/ videos/ CDs are easy to use - high quality - controllable in classroom; therefore, increasing.
	11	1. Cutbacks allow people a good "excuse" for non-innovation. 2. People will not buy their own computers - teachers have also been cut back in salary.
3104	4	Perhaps an off site location is something our school division should look at. Very expensive equipment and seldom used equipment could be shared between a few schools.
	7	Students- do use audiovisual equipment and the trend is increasing with the introduction of new programs. However rural school tends to have less technology and fewer items in their school so they tend to have much less access to equipment. Rural students are at a disadvantage technically. i.e. our school has no telecommunications.
	11	1. Older audiovisual equipment breaks down often and we have trouble finding parts. 2. It seems rural schools have been at a disadvantage in the past as far as expenditures especially, computers and high end technology.
3707	11	1. Older audiovisual technology probably needs repair, will be difficult to find (outdated) HELP!! 2. Computer technology must keep "current". Cutbacks will deny schools to "upgrade" equipment as well as purchase new!!
3815	11	Less one to one technology instruction. Forced to rely on private enterprises.

Category 3		
School #	Page #	Survey Comments
4205	4	Our library will be moving into the computer and CD world in the next fe months.
	7	Our Drama and English departments make the most use of the audio and visual materials - including the student use of making videos. Science areas make heavy use of filmstrips and are moving into videos.
	9	We have fax machines and modems that our students and staff use to communicate with other schools, businesses, and bulletin boards.
5101	11	Good questions need more choice in answering.
5209	11	1. Haphazard approach due to lack of appropriate level funding and money for planning. 2. There is a real need for initiative monies and or incentive (private sector) programs.
5827	11	Computer technology is a tool which students in junior/senior high school shouyld be taught to use, but computer technology should not sidetrack us from our most important role, which is to impact knowledge to students. Knowledge of history, geography, math, grammar, and primary scientific principles. Sounds mundane in a world which bows before the alter of technology, but it still vastly outperforms anything else.
7071	9	Almost all use of computer technology in our school is linked to CTS courses. - Little use of computers in the core classes.
	11	Several years of tight budgeting have left our school years behind industry in effective use of technology.
7905	11	The inequity in funding non-public/ Catholic schools further restrains those schools from being able to pursue the most current technologies.
8402	4	Our school has a CTS lab as well as a computer lab and word processing lab. The library has six computer stations with two CD Rom players. All computers are networked with Apple Share and have resources on CD Rom. Questions regarding CD's I answered with CD Rom in mind.
8403	4	School has one Mac lab, one I.B.M. lab, 48 in total. Library has 6 I.B.M. computers & 3 multimedia computers. LAN connector to WAN.
	11	1. Inadequate funding to provide adequate entry into the study of technology or the use of technology to support learning. 2. We are preparing students for a future with archaic technology. Funding by gov't is adequate to provide traditional instruction in the 3 R's, but it doesn't provide the knowledge that students will actually need.

Category 3		
School #	Page #	Survey Comments
8901	7	Page 5- Our in-school collection of videos is our second most common source. Page 6- As more videos become available - they are replacing the 16mm format.
	11	1. Reduction in ability to replace dated materials unable to introduce technology as originally planned (slowed down). 2. This school year: library/ resources budget cut 20% staff reduction of 30%.
8902	9	Word processing- move to compulsory 3 credit class.
9599	11	There will always be further expenditures for repair and upgrading of equipment and acquisition of AV resources.
9816	4	I have estimated purchases for next year as this is not decided until budget monies are received in approximately Oct. 95. Priorities would be 1) Laser disk players 2)VCR cameras.
	7	There is a need for the province to continue and augment the availability of videos for which duplication rights have been acquired through Alberta Education and the Western Canada Film and Video Showcase. Every school should have access to a core of videos which support curricular needs at a reasonable cost (i.e. under $10.00).
	9	Our biggest problem is lack of funds to purchase expensive computer equipment.
	11	Inability to provide adequate access to technology for all students and teachers.
9836	7	We mainly purchase commercially prepared videos (eg. Sunburst) - I didn't see a category for this.
9847	4	Appears that you have missed VCR units, we have 16.
9908	7	Videos are often used to enhance the subjects taught to the students. Our students have learning disabilities so videos are often used. Audiotape recordings are occassionally used at exam time.

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