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ABSTRACT

This paper reviews the research literature from the early 1980s to the present pertaining to instructional media utilization practices in secondary classrooms, including the challenge for educators in today's schools, the utilization of instructional media technology in the classroom, the impact of teacher training, and the effectiveness of teaching with media in secondary public schools. The literature examined includes journal articles, ERIC documents, dissertation abstracts, and reference books. The review focuses on knowledge about instructional media technology from experts in education and on similar research studies in the field; school and student characteristics that can affect the selection and acceptance of instructional media; and the identification of conditions and implications for effective use of educational media technology in secondary classroom instruction. Previous research studies that have identified relationships between teacher training and the use of various instructional media technologies are examined as a method for evaluating current media utilization practices as they relate to teacher education. Both positive and negative aspects of this research are presented, as well as recommendations by practitioners and researchers for future investigations associated with instructional media technology. (Contains 24 references.) (ALF)

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INSTRUCTIONAL MEDIA TECHNOLOGY IN SECONDARY EDUCATION

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Introduction

In the eighties a series of national studies and Congressional commission reports on American education expressed serious concerns that students were ill-prepared to move into productive careers in the workplace because of inadequate education (National Commission on Excellence in Education, 1983). Response to these studies and subsequent reports brought about challenges for educational reform. Educators typically addressed changes in the way all of us go about the business of education by suggesting longer school days and year, and increasing requirements for graduation (Annison, 1983). Proposals such as these will most likely not be the answer for gaining student interest and active participation in learning. In order to obtain substantially different outcomes from schools, there must be substantial change in how schools operate, what they invest in, what they seek to accomplish, and how they relate to children in their care (Greenfield, 1985).

It is doubtful that the American public, including those in the educational system, has ever been more disenchanted with public education than at this time in our history. Neither has dissatisfaction been so widely disseminated. Educators are well aware of increasing demands from parents, institutions of higher education, employers, and the military to correct the lack of basic skills in the nation's youth (Engstrom, 1981). Educators have begun to respond and future educators will be asked to restructure the American school. In order for this to occur, the role of the classroom teacher and the way instruction is provided must change (Rich, 1988).

In addition to responding to school reform, our nation is faced with multiple dilemmas concerning education. Costs are rising, enrollments are declining, drop-out rates increasing, and school budgets being cut. Education, more than ever before, must consider all aspects of the problem and seek alternative solutions while simultaneously maintaining quality instructional programs. At the same time, we have become a high-technology society which demands the facilitation of more effective teaching and learning to produce meaningful, contributing members of that society.

With the proliferation of new technologies on the market today, comes public demand for the application of innovative, but untested, high-technology teaching tools. Research and development in technology has brought to the classroom a multitude of computing and communications hardware and software making it possible to link text, video, audio, and interactive computer programs that were mere dreams, in the minds of a few, less than ten-years ago. The latest phraseology for these multiple forms of linked media is integrated or multi-media. Proponents for multi-media seem to be telling the educational world that by simply multiplying the number of media technologies available they will foster better teaching and improve learning. However, the availability of additional media does not, by itself, guarantee more effective learning or make better teachers (Moore, Wilson, & Armistead, 1986).

The use of instructional media technologies have certainly proven to be powerful educational tools because they have the capacity to involve students in their own learning, to capture students' attention, to extend their minds, to bring the outside world into the classroom, to evoke response, and to broaden and enhance the overall school experiences of young people (Bowie, 1985). Contemporary technologies are significantly impacting the educational process.

This paper will discuss the research literature pertaining to instructional media utilization practices in secondary classrooms. The discussion describes the challenge for educators in today's schools, the utilization of instructional media technology in the classroom, and the impact of teacher training and effectiveness of teaching with media in secondary public schools. Previous research studies that have identified relationships between teacher training and the use of various instructional media technologies were examined as a method for evaluating current media utilization practices as they relate to teacher education. Both the positive and negative aspects of this research will be presented, as well as recommendations by practitioners and researchers for future investigations associated with instructional media technology.

The literature reviewed included an investigation of twenty-two articles focusing on instructional media technology in educational journals, ERIC documents, dissertation abstracts, and reference books. The examination focused on knowledge about instructional media technology from experts in education and on similar research studies in the field, school and student characteristics that can affect the selection and acceptance of instructional media, and the identification of conditions and implications for effective use of educational media technology in secondary classroom instruction. Because of the rapid changes in instructional technology, searches of the literature for references on instructional media technology were limited to those published from the early-1980s to the present.

The Challenge for Educators

Our society has changed dramatically during this century. Advancements in technology have been responsible for the majority of that change which is reflected in changes from an agricultural to an industrial society, and then to an

information society (Annison, 1983). Education has not been immune to the changes dictated by society. Over the last ten years, American education has been critically examined. These examinations have produced both public and private sector reports which have established a framework for urgent action toward reform and overall restructuring of American public education (Murray, 1989). He goes on to say that, during these times of national criticism, considered by some the Dark Ages of education, the key element for educators is to cope with this influx of change while simultaneously maintaining quality instructional programs. It is important to note that in education, technology is not neutral; it is so pervasive, in fact, that it changes values, judgments and decisions such that with every technological advancement comes a new value in our society. There are differing opinions about how education can address these societal changes and respond adequately to demands for improvement and commitment to reform in our schools. Rich (1988) suggested that,

> in order for the educational environment to meet the two major goals that we all can agree upon, to provide excellence and equality in schooling, future educators will be asked to restructure the American school. In order for this to occur, the literature suggests that the role of the classroom teacher and the way instruction is provided must change. (p. 26)

The importance of the teaching and learning process is not a new concept in educational pedagogy and instructional technology methods. Variables exist in individual learning styles and learning rates; therefore, certain treatments work for certain learners under certain conditions (Murray, 1989). Heinich, Molenda, and Russell (1982) suggest that, "finding ways to match individual learners with the appropriate subject matter, pitched at the right level, and

presented in a compatible medium, at the optimal pace, in the most meaningful sequence," (p. 311) are improvements necessary for planning, developing and presenting quality instruction. Murray (1989) goes on to explain that instead of debating about the legitimacy of media technologies in education, professional educators should focus on the quality of the teaching and learning process. Furthermore, as reform and restructuring of our schools continues and the role of the teacher changes, so must the role of instructional media technologies.

Educational decision makers are faced with demands to improve basic skills, and additionally, that different learning theories be accommodated in planning instructional programs, curricula, materials, and equipment (Engstrom, 1981). Public school education, that historically exposed all students to the same curriculum, presented in the same format, is being replaced by methods which meet the needs, interests, and capabilities of every student. Engstrom goes on to say that, "students of the same age, in the same grade or class, do not have the same educational or learning patterns is changing the way that educators plan and deliver instruction" (p. 3). If teaching strategies and methodologies which facilitate active student participation in the learning process are to be incorporated into instruction, additional resources must be identified and utilized in the classroom.

While there are many challenges for educators to improve instruction, to individualize learning, and to limit spending, there are an equal number of cautionary suggestions made for solutions to the problem (Engstrom, 1981). Proponents of educational technology as a systems design claim that education should follow from needs assessment to evaluation, involving both human and non-human resources. Of course there is more to educational technology than media, hardware, software and a host of other technological jargon. The

President's Commission on Instruction and Technology provided this definition of technology,

> Educational technology goes beyond any particular medium or device. In this sense, educational technology is more than the sum of its parts. It is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based upon research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective learning. (1970, President's Commission on Instruction and Technology)

In other words, this definition views educational technology as a process rather than merely the application of electronic gadgetry to education. Furthermore, in this view, solutions to teaching and learning effectiveness will not necessarily encompass the use instructional media technology, and that educational technology is more of a process, not tangible products or things.

Additionally, those who propose a movement in back-to-basics, not only express dissatisfaction with the current practices that they believe produce students who cannot read, write, or complete mathematical computations, but also disagree with the use, or proposed use, of technology to meet educational goals (Engstrom, 1981). Warnings also come from educators to those who believe that the products of technology alone will solve the problems facing education. Every resource used in a classroom should directly or indirectly result in increased student achievement (Pitts & Schneider, 1981). If it doesn't, they go on to explain, the so called "resource" becomes technological gadgetry and a detriment to meaningful instruction and learning. Therefore, according to Pitts and Schneider (1981), instructional technology is not generally regarded as

central to the educational process. Frequently, instructors become so involved with technology that they overlook the more important factors regarding lesson preparation, and when instructional technology fails, the blame is inappropriately placed on the technology.

How best to approach the challenges posed to educators for the purpose of increasing effective teaching and learning have organizational and budgetary implications, as well as educational ones, and will have an effect on students, faculty, staff, parents, and the community at large (Engstrom, 1981). Clearly, there is no single answer to the problems that educators are facing today; however, media technology can be an important part of the solution. The following sections of this paper will discuss instructional media technology in education and investigate the implications for teacher training and the use of educational technology in the classroom.

Utilization of Instructional Media Technology

The case for the use of instructional media technology in the classroom is a convincing one. Several researchers have identified major advantages supporting the media technology approach to instruction in secondary classrooms. Bowie (1985) reported that,

> research tells us that media have the capacity to involve students in their own learning, to capture students' attention, to extend their minds, to bring the outside world into the classroom, to evoke response, and to broaden and enhance the overall school experiences of young people. More specifically, media are effective in teaching facts and concepts, sharpening inquiry and

discovery skills, teaching psychomotor skills, changing attitudes, and in facilitating student motivation for learning. (p. 105)

Bowie also explained that instructional media are more time-saving and less expensive than conventional teaching methods and are generally easy to use. Media technology can, according to Moore, Wilson, and Armistead (1986), enhance instruction by displaying events and things that are far away, that took place in the past, that are too small to see, too large to transport, too complex to understand, or even things that cannot be seen at all.

Greenfield (1985) identified four major advantages for the instructional media technology approach to instruction. Primarily, a media presentation provides a more complete informational picture than any one medium alone may provide. Secondarily, each instructional technology medium emphasizes certain ways of thinking and modes of perception, thereby helping the learner develop new skills that print alone does a relatively poor job of fostering. Thirdly, television, film, video games, and other computer technology are here to stay. The opportunity for influencing children's positive educational use and perception of the different media can make their responses more active, more sophisticated, and more critical. Finally, electronic media technology in the schools would enable teachers to capitalize on the strong motivational qualities that these technologies have for children. Greenfield states that, "An educational system that capitalized on this motivation would have a much greater chance of success" (p. 20).

Instructional media technology can provide increased opportunities and incentives for students to become more active, skilled, and self-directed learners who can define and solve real world problems (National Foundation for the Improvement of Education, 1991). Using instructional technology, students

assume greater responsibility for the pace, style and sometimes, the content of their learning. The report further explains that instructional technology opens the door for teachers to organize learning experiences around their students' individual learning style, and provide alternative learning experiences which appear to increase motivation for students who generally are unresponsive in traditional learning environments.

While instructional technology can never replace a teacher in the classroom, it can provide additional tools and resources that make the teacher far more effective (Garcia, 1992). The use of instructional technology can result in teaching strategies that reach far beyond basic skills and will play a central role in restructuring classrooms and schools. As teachers become more skilled with technology and begin using it to enrich and challenge traditional pedagogy, they discover new ways of thinking about teaching and learning (Engstrom, 1981).

Teacher Training in Media Technology

Any innovation proposed for introduction to a school system is not likely to be accepted or incorporated unless it is understood and supported by the teachers and others who are directly affected by its addition (Engstrom, 1981). Passive resistance on the part of teachers toward new processes, educational strategies, or teaching devices has caused the demise of many potentially good ideas and products. Engstrom (1981) points out that to prevent this from happening teachers and other school staff need to understand the capabilities, limitations, and instructional uses of the technology, and they need to become skilled at using it. Provisions for training teachers to use the technology is essential for success in the classroom. Teachers who are not properly trained often use equipment for the wrong reasons or in the wrong way which results in

disappointed teachers, frustrated students, dissatisfied parents, and angry taxpayers.

Avid users of instructional technologies and associated materials are sometimes perplexed when other teachers in their school resist using the medium in their instruction. Teachers who have taken a basic audio-video course can recite the many advantages of using instructional media in their teaching (Moore, Wilson, & Armistead, 1986). Why then, if media technologies exhibit so many advantages, do teachers resist incorporating these technologies into their instruction? As reported by Moore, Wilson, and Armistead (1986), "some teachers fear innovation in general while others are uncomfortable with new and different teaching techniques. Others have genuine concerns, misunderstandings and unpleasant experiences such as unfulfilled expectations and promised panaceas which remain unrealized" (p. 186). An additional concern expressed by teachers who do not use instructional media is the lack of administrative support and training in the use of technology for instruction.

Engstrom (1981) suggested that teacher training begin by showing teachers how media can support them in their teaching performance. In order to take this approach she identified competencies which teachers and school staff should attain. First, knowledge about the medium's role in education with an emphasis on the extent to which the medium supports traditional teaching functions. Second, development of skills in using the medium with the techniques of drill and practice, simulations, and exploration of new content or concepts. Third, teachers must be able to use the media for management of instruction, including test generation, administering and scoring, recordkeeping, and curriculum materials generation. Fourth, identification of appropriate types of material to meet educational objectives and student needs. The final

competency teachers must attain is skill in designing and developing materials that are specific to learning needs of students. Although the preparation of teachers for the use of media may take place informally, most teachers will have to rely upon other sources for training. Some sources for training identified by Engstrom (1981) include; pre-service or continuing education courses in universities, courses offered by professional organizations, in-service training offered by state education agencies or local school districts, or in-service training by equipment manufacturers or distributors as part of a purchase agreement.

With regard to teacher use of instructional media technology, Bowie (1985) developed a questionnaire and conducted research to evaluate how teachers used media in their classrooms. The study was conducted in early 1985, and was a survey of the perceptions of teachers concerning twenty-two statements taken from the current literature. Questions about what teachers did before, during, and after presenting instruction were included as well as questions about the types of media used for instruction in their classrooms. Respondents were selected by principals, library media specialists, and teachers in a two-state area according to their frequent use of media in the classroom. Media examined in this study were; 16mm motion picture film, television/video, filmstrips, and 35mm slide projection equipment. Teachers who do not use media technologies were not included in this study, and questions in the survey instrument did not address how the participants acquired training, or if they were self taught.

The findings of this study suggest a high level of knowledge for the effective use of instructional media. Bowie stated that, "the teachers identified for this study were those who are highly competent and are among those who represent a highly select group that is working in today's classrooms" (p. 117).

Recommendations from the study suggest that principals and district administrators become aware of and evaluate the current media utilization practices in their individual school districts. Bowie (1985) further suggested that all teachers should be encouraged to use media in their classrooms and to use them in the most effective manner possible. It is not enough to sit back an know that only the exceptional teachers are using media technologies.

In a call for papers from teachers who currently use advanced media technologies, the National Foundation for the Improvement of Education (1991) found that most of the respondents had developed their own skills, and had trained themselves on the media technology that they employed in their classrooms. In fact, the general consensus among the respondents was that it took as long as six-years to integrate instructional media technology into their teaching. It was concluded that more opportunities for training and experimentation could significantly reduce the time necessary for teachers who are learning to use media technology effectively and aid in the restructuring of their classroom learning environments. Some of the teachers reported a definite lack of support, and even opposition to their efforts by administrators and principals in their school districts. The reasons for this are not immediately obvious. However, this report suggests that the fact that it does exist is an indication that much remains to be accomplished when it comes to educating educators about the potential of technology in contributing to efforts toward improved and restructured education.

A media usage study conducted by Gilbert and Hennigan (1982) investigated the current status of media utilization by classroom teachers in secondary schools. A randomly selected group of 1,128 full-time secondary teachers were surveyed from 150 schools in 38 states and American Overseas

Schools. Data were collected through the use of a questionnaire in seven categories: (a) current teaching assignment; (b) source of media knowledge; (c) type of school; (d) frequency of media usage; (e) years of teaching experience; (f) effectiveness of teaching with media; (g) value of media. Only 13% of those secondary teachers surveyed used media more than three times each day, while 15% did not use media at all, and 72% responded that they use media from one to three times each day. Relative to instructional media technology knowledge acquisition, the following questions were asked: First, "Should school system in-service programs be responsible for media instruction?" In response to this question, 73% of all of those teachers surveyed indicated that school district in-service programs should be responsible for this type training. The second question, "Have you participated in an in-service program or workshop with emphasis on instructional media?" In response to this question 52% answered that they had not. The final question was, "Do you think secondary teachers should have a media course in the required coursework of a teacher education program?" Teachers surveyed indicated they desired a media course in university teacher education programs with 86% answering yes. Results of the study suggest that secondary teachers value educational media in their instruction, and teachers who use media technology daily agree that their teaching effectiveness is improved.

In the past decade, researchers have reported that workers in human services fields, such as teaching, have been susceptible to, what has been termed, the "burnout syndrome." In general, burnout can be defined as inappropriate attitudes towards students and towards self, with varied emotional and physical symptoms, as well as deterioration of performance (Seidman, 1985). Teaching, at all levels, can be a stressful, unsatisfying experience in

which stress results in job dissatisfaction, negative response to students, and to teaching as a career, as well as a perception that there is a lack of administrative support (Seidman, 1985).. For a variety of reasons, some teachers do not cope well with job-related stress. Furthermore, it has been reported in the literature that teachers who are adequately prepared, and feel they have been encouraged and supported in their job performance efforts are less likely to experience teacher burnout characteristics (Spaniol & Caputo, 1980). Therefore, teachers who are supported by their administrators, who have completed a good instructional media technology utilization component in their pre-service and/or in-service training programs, and who's energy level has not been depleted by burnout symptoms should be more likely to use instructional media in their teaching (Seidman, 1985).

Seidman suggested that technological, administrative, economic, and personal circumstances are reasons why teachers do not utilize instructional media in their classrooms. Rose (1982) suggested that teachers resist using instructional technologies due to a lack of motivation "to adapt course content to the technology, to manipulate the equipment, and/or to prepare software" (p. 12). Seidman (1985) pointed out that individuals who experience the burnout syndrome will react with expressions of anger, sadness, and/or depression, not by trying harder, and that its victims exhibit a general lack of enthusiasm and excitement toward teaching. Furthermore, the regular use of media technology in teaching requires planning, a certain level of motivation and effort, and positive administrative support.

A study conducted by Seidman (1985) examined the relationship between teacher burnout and the use of various instructional media in teaching in the Fort Worth, Texas public school system. The study was designed to collect and

analyze data to determine if teachers with low burnout symptoms use certain instructional media more frequently than do teachers who exhibit high teacher burnout characteristics.

Instrumentation design for the study sought to measure teachers' perceptions about the degree of administrative support received, their career satisfaction, their ability to cope with the stresses related to teaching, and their attitudes toward students. All of these factors were considered, by Seidman (1985), as major elements underlying the measurement of teacher burnout. The Teacher Burnout Scale developed by Seidman and Zager (1984), a demographic questionnaire, and a media utilization inventory were used in obtaining data for the study.

Results suggest that teachers on the lower end of the burnout dimensions tended to use instructional media materials and equipment more frequently than do teachers who exhibited higher burnout characteristics. Seidman (1985) stated that while the relationship between media utilization and teacher burnout is not a particularly strong one, it is apparent that the relationship does exist. Furthermore, the results of the study indicate that teachers tend to use instructional media technologies less, or not at all, as burnout symptoms increase.

Encouraging teachers to use instructional media technologies could help revitalize those persons who are burning out. If there is any hope of this strategy succeeding, according to Seidman (1985), it is necessary that those concerned with teacher education and professional development provide training programs and assistance in media utilization, as well as arrange for workshops, retreats, self-support groups, and other approaches that have proven to help on alleviating burnout among teachers.

A timely issue in education is the declining use of traditional instructional media in the classroom. There are a large variety of factors, three identified by Nelson, Prosser, and Tucker (1987) are (a) cuts in spending in recent years, (b) the back-to-basics movement in public schools, and (c) the recent rush to purchase computers, video cassette recorders, and an assortment of teaching and learning computer software. These trends, coupled with the fact that many teacher training programs are not requiring courses in the use of instructional materials and media, are leading to the decline of traditional instructional materials in the classroom.

Nelson, Prosser and Tucker (1987) reported on a survey study which was conducted in Illinois to examine the decline of traditional media utilization in the public school classroom. Five hundred questionnaires were randomly distributed to teachers throughout the state. The response rate to the questionnaire was good with fifty-five percent of those teachers surveyed responding. The questionnaire requested that respondents identify problems in teacher usage of traditional instructional media technologies from items such as (a) datedness, (b) broken equipment, (c) ordering complications, (d) poor quality, (e) sharing complications, (f) damaged materials, and (g) delivery complications. Teachers were also asked about their overall reduction in using traditional instructional media technologies.

According to those teachers surveyed in Illinois, the utilization feature seems to be declining, to the point that they reported a thirty-four percent overall reduction in traditional instructional media. The percentages on the declining degree of usage were consistent among the survey group. The problem which these teachers identified most frequently was out-of-date materials. Over fifty-percent of the respondents pointed to the obsolete content and nature of materials

as their major resistance on usage. Thirty-five percent listed old or broken equipment or unreliable equipment as a major problem. It is important to note, that the study indicated little increase or decrease of other forms of media, but the increase of computers and VCR's was recurrent throughout the survey.

If the present trends continue, most media previously used for instruction in the classroom will become obsolete, with possibly the exception of VCR's and computers. Nelson, Prosser, and Tucker (1987) point out that these media technologies will be preferred because of their local materials preparation abilities and convenience to both home and school. This convenience makes it possible for teachers to prepare instructional materials at home on their personal computers and VCR's for presentation in their classrooms. As a result teachers are enrolling in elective college courses and workshops to enable themselves to better use the current technological advances of video cassette recorders and computers (Nelson, Prosser, & Tucker, 1987).

The study suggests that a return to textbooks and other text material resources are being emphasized for teaching and learning, and with the exception of VCR's and computers, dependence on older audio-visual media technology is vanishing. Nelson, Prosser, and Tucker (1987) further suggest that many of the media not being used are being discarded prematurely, and much could be done to prevent it. They conclude their report by stating that teacher preparation programs should place media technology courses back into their curricula, and in-service training programs need to be instituted for teachers without working knowledge of instructional media.

Cropp (1990) conducted a survey of elementary teachers in Kansas to learn of the use they make of instructional media in their classrooms. Simultaneously, the Kansas teacher education institutions were surveyed to

determine what media instruction was being provided for pre-service teachers. The information was obtained from both sources simultaneously in order to gain additional insight into the relationship between what was taught in teacher preparation program methods courses and the media technology being used by teachers in the classroom.

Results of this study indicate clearly that instructional media is an important component for the effective teacher, and that teacher preparation programs should require an understanding of the medium prior to initial certification of the teacher (Cropp, 1990). Furthermore, teacher educators must strive to provide instructional media curricula and laboratories to train pre-service teachers in the production and use of media in the classroom, as well as new media technology expected to be available for classroom use.

Whether or not media needs are being met for beginning teachers, Cropp (1990) stated, "Yes. Generally" (p. 227). Teacher education programs included some instructional media coursework in which text materials and course curricula matched reasonably well with instructional media utilized by classroom teachers. Cropp (1990) further suggests that instructional media faculty at the college level upgrade media equipment at the same rate other categories of instructional materials are purchased, and use the equipment to provide workshops, short courses, in-service presentations, and graduate level media seminars for teachers already in the field. Teacher educators need to focus more money and more energy on the instructional media component in teacher education, and on the true needs of the classroom teacher.

Although the report focused primarily on instructional media technology with regard to elementary school teachers, Cropp (1990) explained that, "an examination of instructional media at the secondary school level is needed also,

and perhaps one at the college level" (p. 227). Cropp further suggests that not only should other levels be examined, but all levels should be examined every five-years to insure appropriate instructional media technologies are available to maintain an effective teaching and learning environment.

Summary

The use of instructional media in the classroom provides a means for presenting instruction that would otherwise be impossible utilizing only text based materials. It allows students to interact with an unknown or foreign environment, to understand difficult concepts through visualization, and to actively participate in his or her own learning. Media technologies are more versatile than textbooks or other printed materials, and can be utilized to accommodate diversity in learning styles in order to meet individual needs of students in the learning environment. Garcia (1992) stated that,

> traditional resources, such as the textbook, must be supplemented by technologies that permit students and teachers access to up-to-date material and information. Students become motivated when they perceive a connection between what is going on in the classroom and the realities of the outside world. (p. 62)

Instructional media technologies are one means of providing a learning environment which facilitates active student participation and improving the learning process for all students.

If instructional media are to be readily accepted and used in the classroom, the literature clearly indicates that teachers must have an operational knowledge of the media and that they must also have administrative support. Additionally, the literature suggests that teachers will require professional

development workshops, in-service training, and seminars to keep abreast of the changing instructional media technologies designed for classroom instruction. Researchers also suggest that university teacher preparation programs include a media technology component for pre-service teachers, and that they focus more energy and money into instructional media technology.

Recent years have seen reductions in the use of instructional media in secondary classrooms. Several factors which have influenced, limited or reduced media usage in the classroom are: the instructional media equipment and materials are dated or obsolete; school budget allocations for media expenditures have been severely cut; many teachers have interpreted the back-to-basics movement as meaning back to more textbook teaching and learning rather than enhancing programs with new and innovative media technologies.

Most classroom teachers will agree that training and professional development are necessary elements for successful media presentations leading to effective teaching. Some teachers also reported a lack of administrative support, even opposition in their efforts to incorporate instructional media technologies in their teaching.

It is apparent that teachers are experimenting with new ways to incorporate instructional technologies into their teaching for the purpose of enhancing their instruction and student learning. Technology is a long way from being fully integrated in education; however, teachers, teacher educators, and school administrators are planning and implementing effective strategies for training and utilization of media technology in the classroom toward improving the design and structure of teaching and learning processes.

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