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ABSTRACT
        This practicum was designed to increase elementary
education interns' use of video technology within the science
curriculum. Interns from previous semesters were not using technology
within their final semester projects, and most were not comfortable
using technology. The purpose of this practicum was to increase the
scientific and technological literacy of the interns and develop a
positive attitude toward the use of technology within their
instruction. Within this practicum, the interns had the opportunity
to develop the skills and confidence needed to be technology
literate. A cooperative training program with the local public
broadcasting station was developed, and instructional video
technology was modeled within the weekly course presentation. Also, a
video technology resource room was created for the interns. Analysis
of the interns' final thematic unit presentation indicated an
increased use of video technology, and, through a reflective attitude
paper, all the interns stated an increased comfort level for using
technology within the curriculum. (Contains 35 references.) (JLB)

Using Video Technology as an Instructional Strategy
within the Elementary Science Curriculum

by

Geno J. Torri, Jr.

Cluster 57

A Practicum I Report Presented to the Ed.D. Program
in Child and Youth Studies in Partial Fulfillment of the
Requirements for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

1994

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PRACTICUM APPROVAL SHEET

This practicum took place as described.

Verifier: _Joel A. Bechtel_

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_5/10/94_
Date

This practicum report was submitted by Geno J. Torri Jr. under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

May 29, 1994
Date of Final Approval of
Report

Wm. W. Anderson
William W. Anderson, Ph.D. Adviser

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ABSTRACT

Using Video Technology as an Instructional Strategy within the Elementary Science Curriculum. Torri, Jr., Geno J., 1994: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Teacher Trainers/ Classroom Educators/ Multimedia Director/ Principal/Supervision.

This practicum was designed to increase the elementary education interns use of video technology within their science curriculum. Interns from previous semester were not using technology within their final semester projects and only 2 of 10 indicated that they felt comfortable using technology.

This writer established a cooperative training program with the local public broadcasting station, instructional video technology was modeled by this writer within the weekly course presentation, and a video technology resource room was created.

Analysis of the interns' final thematic unit presentations indicated an increased use of video technology. Through a reflective attitude paper all the interns stated an increased comfort level for using technology within the curriculum. All interns within the course expressed an interest in learning more about utilizing video technology as an instructional strategy.

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Permission Statement

5-29-94
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(date)

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(signature)

CHAPTER I

INTRODUCTION

Description of Community

The greatest strength of the community in which this writer works and lives is its excellent setting within our nation's industrial and consumer markets. The multi-state region within one day's driving time contains more than 40% of the United States population. The area is serviced by four major highways, rail, and one local and four international air transportation facilities. Even with such metropolitan resources, the community of under 20,000 has maintained a rural setting. According to a county development report, the county is comprised of 482,560 acres of land, with 254,428 of those acres associated with agricultural usage. There are 510 farms in operation that take advantage of the average annual temperature of 51 degrees Fahrenheit, annual rainfall of 42 inches, and a growing season that begins May 15th and extends to October 15th.

' With the civilian labor force of 60,727, the area has maintained an unemployment level below that of the state and national figures for the last five years. The same county development report cited earlier

indicates that the manufacturing, wholesale and retail trade services, and government are the largest employers, accounting for more than 75% of the employment. The top three employers are international operations with a total employment of over 7,000. But the greatest number of employers, 1,068, are establishments employing one to four workers. 40.3% of the work force are blue collar, 26.4% white collar, 20.2% professional, and 13.2% service jobs. Residents remain local in their place of employment with 76.7% of all workers living and working within their municipality.

The high level of employment supports the positive growth that the area has undergone for the past ten years. The population has seen a growth of 6% since 1980 and a personal income increase of 43%. The area has 45,598 households, an increase of 14.3% with the average value of a home at $77,330, up 7.9%. 35.6% of the homes are in the $50,000 - $74,999 price range and the smallest category of homes, 1.5%, priced over $200,000. Growth and construction within the area have been and continues to be strong. 20% of all the homes within the area have been built since 1980 and 66% of the units built in the 1990's are single family detached homes. The values of a small community are reflected in the composition of the area's households. 85% of these households

are composed of a single person or married couples. The median household income is $28,806 and the per capita personal income is $15,255. The per cent of children living in households below the poverty line is 5% below the rate within the state according to a state labor department report.

The area provides a broad spectrum of educational opportunities. There are six public school districts, a vocational and technology school, a private secondary level academy, twelve schools with religious affiliations, a state owned K-12 children's school, two state related universities and one private college. It is within the private college that this writer works and it is within this setting that the problem has been identified.

Writer's Work Setting and Role

The writer's institution is a college for women founded in the mid-eighteen hundreds to provide a strong liberals arts education. Today the college, which is located on 240 acres, is home to Victorian architecture, 32 buildings, a museum of natural history, 97 species of trees, a 125 acre farm and a winding creek. The traditional women's college offers 18 majors, and 27 minors, while the College for Continuing Studies serves

both women and men with the same majors and minors, seven additional

associate degree programs, and an educational intern certification

program.

The writer's institution provides an intimate and supportive

environment in which to develop both intellectually and spiritually. The

faculty, of which 74% hold a Doctorate or terminal degree, provides a

student to faculty ratio of 7 to 1. The student body also provides a rich

source of diversity from which each student may grow. 40% of the

students are from out of state and 7% are international students. 46% of

the entering freshmen rank in the top 25% of their class and have an

average combined SAT score of 1,020 (Devon, 1992).

Of the seventeen departments on campus, the writer's department,

education, has the greatest enrollment within the college. Of the 901

total enrollment, 217 are within the traditional women's college and 473

are enrolled within the Department of Education. This department

services three programs, the adult learning program, the teacher intern

program, and the traditional teacher certification program. The writer

works with all three programs but it is within the intern program that

this practicum has been completed. The intern program provides the

individual who currently holds the minimum of a four year degree, the

opportunity to take a concentration of educational courses and enter the educational profession. The program currently has 310 interns within the program and the population is 75% female with an average age of 34 and an average educational level of 16.3 years. 90% of the interns have degrees from in-state institutions, 20% have had at least one education course and 99% are required to take this writer's course (Devon, 1992). The setting for the classes is within a traditional college classroom environment. Single person seating is available within the classroom and no laboratory space is available. All instructional materials must be provided by the instructor with the exception of the overhead projector and the VCR/monitor which are located on site. The class meets one evening a week for fifteen weeks with each session lasting the traditional two and one half hours.

The curriculum content of the course has been approved by the State Department of Education and is reviewed by the state every three years. The curriculum content covers the following areas, scientific and technological literacy, learning science, teaching science, questioning and listening, assessment, classroom management, programs and textbooks, integrating science, and students with special needs. The interns are required to obtain five books for this course; a textbook which promotes

the discovery learning process, a current classroom textbook from a local school, two trade books, and a resource activity book.

The weekly session outline is designed to present the fifteen weeks of content in three parts with each supporting the next (see Appendix A). The first third of the semester is designed as the presentation of theory, local, state, and national resources, and state instructional requirements. Interns at this time are expected to be out in the field observing classroom educators. Using an instructional process review guide (see Appendix·B), the interns are to look for the theory within the classroom. All observations have a written follow-up where the interns reflect upon the lesson or techniques observed. They are to return to class prepared to share their data and provide insight to the classroom situation. This activity, the observation of classrooms, was expressed as a need by experienced classroom educators as a method of professional growth (Fishman & Duffy, 1993).

The second third is the introduction and application of instructional techniques. This presents the interns with the strategies that have worked and some that are only ideas. There are many hands-on projects to be constructed and using their textbooks and resource books each intern is required to identify various instructional techniques that would

be useful at a certain grade level and within certain learning modalities.

The final third of the semester is the skill development portion of this learning experience. Now the intern takes the theory and physically converts it into an instructional style that best matches his/her philosophy of education and the goals set at the local and state level.

Understanding learning styles and integrating effective instructional strategies in the learning process is vital. This course challenges the intern to view each child as an individual with a unique learning style. The course also asks the intern to develop an awareness of the child's strengths and to integrate effective instructional strategies in the learning process. This writer's course requires the interns to observe the attention given by classroom educators to the individual modalities of the learner. Following instructional and environmental classroom observations, lectures, and collaborative learning experiences, the intern is required to present his/her sensitivity to the learning styles of children within his/her final curriculum project.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

This writer had a concern that the interns within the elementary

science methods course were not integrating technology into their

curriculum units. It is necessary to work within each child's modality

and if the intern is to be successful he/she must use the complete

arsenal of teaching methods available. In short, the interns use of

technology was less than this writer can be satisfied with and they had

to increase their use of technology within their elementary classroom

practice lesson presentations.

Problem Documentation

This lack of technological utilization has been documented in two

ways; in the final thematic unit projects turned in by the interns and in

the interns perceived skill level with which they enter the writer's

course. Only 2 of this writer's 48 interns used technology within their

final project during the past two semesters.

Upon entering this writer's class, each intern had to complete a

pre-course self analysis form (see Appendix C). This item related to specific instructional skills and the intern's perceived level of confidence within each area. The intern was to rate him/herself with a rating of "comfortable", "uncomfortable", "lack the skill", or "not sure". If an intern rated him/herself in the comfortable level, on any item, an interview was held with the intern to clarify his/her actual skill level. The interview was valuable in the clarification of the intern's actual skill level. Most interns who listed "comfortable" made a change in their rating following the interview. Some had indicated their skill level as "comfortable" but during the interview indicated that they were not at that level but felt they needed to indicate a skill level in some areas on the form. During the preceding two semesters, 38 of the 48 interns had indicated they felt uncomfortable using video technology within the instructional process.

The feelings that the interns brought to the course were reflections of the existing instructional system. Today's classroom has not changed much over the past 90 years. The typical classroom presentation is still being given by a female, alone, and in a little room presiding over a group of children (Kidder, 1989). While technology has become common place within our lives, it has not yet taken on an

active and integrated role within most classrooms. Cropp's (1990), survey of instructional use of media within the classroom showed that classroom teachers and teacher educators ranked the bulletin board as the most valued media format. This was rated above the computer and video technologies.

Causative Analysis

The lack of technology integration is supported by the very institution that is training the intern. The college instructional setting provides poor modeling experiences; it has limited equipment resources, inadequate program sequencing, and students and faculty that by tradition have a negative predisposition to technology.

This writer's institution is not unlike those across America. Pettersson (1993) found that the standard college classroom uses the blackboard and textbook as its primary form of instructional media. At this writer's institution the science methods course is no exception. It is held in a traditional classroom setting, thus limiting the opportunity to model many of the technological processes discussed in the textbooks and professional journals. The room lacks supportive hardware from a permanent dedicated bulletin board space to

telecommunication lines. All equipment used in the instructional process such as balance beams, rulers, microscopes, and computers must be supplied by this writer.

The intern's view of the instructional process is formed by the images cast by the instructor. Limited resources mean limited modeling opportunities. Modeling of instructional techniques is the most influential training technique used within a teacher education program (Brown, Reschly, &Wasserman, 1976). Bandura's (1971) research supports the need for modeling. He found that effects of observational learning upon subsequent social and intellectual behavior was profoundly influenced by the modeling of desired behavior. Bandura and Huston (1961) demonstrated that observations of a model, whether filmed or live, will increase the likelihood of having that behavior performed in the future.

This lack of equipment at the institutional location places an undue burden upon this writer to locate and obtain equipment. The great amount of energy and time needed to provide the equipment so that a positive model can be provided may have led to Goodlads (1984) findings that there was little evidence that teacher educators modeled the behavior they recommended to their students. The combination of

not modeling what is recommended, along with the tremendous amount of energy needed to model, reinforces to the interns the belief that technology and equipment are something they should not expect the institution to supply and support.

In the two preceding semesters 36 of 48 interns entered this writer's course without the suggested prerequisites. The suggested program design is for the interns to have taken Foundations of Education, Educational Psychology, and Introduction to Psychology before this writer's course. These courses provide the interns with the developmental background needed so they can enter this writer's course and apply the scientific knowledge. The methods course should be an arena for the introduction, study and practice of learning strategies. The interns need to spend their time improving their presentation and working on how best to match the learning styles within their classroom with the content of the subject. It is not a time to begin learning that there are differences.

At the present time only 40% of the interns have taken the suggested prerequisite courses first (D. Bowers, 1993). This has presented some problems in developing a working instructional process that has the interns modality sensitive and ready to develop

instructional strategies. This situation exists due to the lack of course offerings and the decision not to hire additional staff to instruct the prerequisite courses. The interns find themselves locked out of these courses and in an effort to complete the program in a timely fashion, sign up for this writer's course.

Relationship of the Problem to the Literature

The research has shown that the mode of presentation of information does affect the comprehension level and the reluctance of educators to use technology is based within a conflict of power and traditional presentation styles. Hoffner, Cantor, and Thorson (1988) studied the developmental changes in children's ability to comprehend a narrative presented either visually or verbally. They found that children in grades 3 thru 7 had higher comprehension in the visual modality than did the younger children. The Stoneman and Brody (1983) study of preschool, kindergarten, and second graders found a superior memory for visual television content at all three grade levels. Four-year olds were able to remember actions better when they saw the actions performed then when they heard them described (Gibbon, Anderson, Smith, Field, & Fishcher, 1986). Radio and reading did

not have any greater success when it came to comparative abilities to
retell a story heard over it or seen on television. When the same story
was heard over the radio and seen on television, the later medium led
to greater retelling (Hayes, 1986). For those given the opportunity to
read a story or see it on televised film, the televised group had the
greater scene recall with the least number of errors. It is this
difference in presentational style that could lead to greater ·
comprehension and information retention so we should be working on
this in the methods course.

The Hannah and Abate (1993) survey of faculty use of technology
has related some possible reasons for this limited use and view of
technology. Some instructors cited a limit of time to learn, plan, and
integrate something new and technical. The lack of training in
equipment operation was a frequently stated concern as was the lack
of equipment and limited administrative support. The lack of time to
train is universal within the educational system and this writer's
institution is no exception. The concern for the availability of
equipment is a concern that does vary from institution to institution,
but at this writer's institution the lack of technological equipment is
critical. This writer must supply all technological hardware and

software to instruct the evening sessions. This will be the situation in which the interns will find themselves, with 90.2 % of the teachers in public school having to bring the TV VCR/monitor to the classroom (Cropp, 1990) thus limiting the availability and ease of integration.

The educational resistance to technology has two components. First is the lack of anyone in the public schools whose job is to look for more efficient ways of teaching. Private industry has accepted and effecti ly used technology due to its immediate dollar-and -cents value attached to instruction. Secondly the resistance can be traced to the general fear of power. It is felt that educators are seldom willing to concede that they are engaged in the control of human behavior and avoid using the word control (Evans, 1968).

Others have looked into the current classroom instructional situation and called for change. Goodlad (1984) reported that classroom practices in the public schools have changed little over the years. He has called for a restructuring of teacher training that will separate new teachers from the narrow and confining practices they themselves experienced as students. A teacher education program that reinforces the appropriate use of technology can implement such a restructuring. The interns within this writer's program need to view

technology as an integral part of the instructional process.

Technology can enhance the learning process and not disempower the teachers and students (C. Bowers, 1988). Training is the key to using educational technologies. Technology can serve as an amplifier of our skills and an educator with poor instructional skills will find that technology will enhance the situation. Technology can not single handedly improve the skill of the classroom teacher. It is necessary to reinforce the concept that technologies are not self-implementing and they do not replace teachers. They provide the opportunity for teachers to function as facilitators of learning rather that as presenters of ready made information (Udall, 1988). Teachers must be ready to use technology as a flexible tool that will enhance the curriculum.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

Today's intern's will be entering an educational environment full of change, increasing enrollment, inclusion, uncertain budgetary support, and technological advances that will impose upon their skills. The interns must be prepared to service the child within his/her most efficient learning style. The purpose of this practicum was to increase the scientific and technological literacy of the interns and develop a positive attitude toward the use of technology within their instruction. For the interns to acquire the knowledge, skills, and confidence to become an effective practitioner, the must actively experience the technology. Within this writer's course the intern had the opportunity to develop the skills and confidence needed to be technology literate. They viewed current classroom technology and then used that mode of instruction to complete course requirements.

Expected Outcomes

The following outcomes were projected for this practicum.

1.   Use the medium of video technology within the instructional portion of a thematic instructional unit practice lesson and score a minimum of 30 on the instructional strategy check list used by this writer (see Appendix D),

2.   Sign out at least three instructional television videos, two resource manuals or a video camera from the technology resource room to develop instructional strategies with utilization of the room being recorded on the equipment sign out sheet (see Appendix E),

3.   At least 15 of the 24 interns will reflect a positive attitude and willingness to use technology by scoring a minimum of 3 points on a Rubric Scale of 0-5 (see Appendix F) when asked to write a reflective attitude paper concerning their use of technology within an instructional lesson.

Measurement of Outcomes

During the first third of this writer's course, interns were introduced to the instructional concept of thematic units. In a thematic unit all the curriculum areas are taught within a central theme such as the rainforest, a famous event, or holiday. Within the unit the interns

identified learning activities that the students would complete. These activities could have been group instructed, independent study, cooperative groups, or any combination. The method of delivery was not the critical issue. What was important is that each child had the opportunity to experience the concepts of the unit in an environment that built upon his/her strengths.

While the most common form of communication is verbal, it is not the most reliable in its ability to precisely convey a message (Dwey, 1978). The spoken word is most effective when both sender and receiver have shared experiences. So if the child is to successfully acquire new content, he/she must first experience an interaction and involvement with a concrete sensory experience that will serve as the common background. A strategy that will accommodate the need for the concrete personal experience and facilitate student learning is the integration of visual materials (Dwey, 1978). The single most influential visual medium that our children encounter is television. Today 99% of homes in America have a television set with the average being 3.4 per household (Brown, Childers, Gauman, & Koch, 1990). By 1987, 85 % of homes with an adolescent had a VCR (Dorr & Kunnel, 1990). The amount of television viewing has been shown to be

both race and sex dependent but the final numbers show a range of

viewing for a typical school week to be from 5.5 hours for the white

female who is 14 year olds to 8 hours for the 13 year old black male

(Brown, et al, 1990). The research of Fetler (1984) showed the reading

and math scores improved for students who have watched 1 or 2 hours

of television at home as compared to those who have watched more or

less than one hour per day. By 1987, 90% of the schools in America

were using television as an instructional medium (Chen, Ellis,

Hoelscher, 1988). Today 97.1% of all schools have a television set,

95.6% have a video cassette recorder and 82.9% have a video camera

(Bruder, 1992).

As Cooney (1993) said in her guest editorial in Electronic Learning,

we must waste no more time in recruiting technology for the classroom.

As an educational device television has important strengths; it is

accessible, cost effective, and works. Coupled with the VCR, we

can make rich video libraries available to teachers. This technology is

here now and it is imperative that the interns develop the skills

necessary to effectively communicate information in this mode.

Outcome number one will be satisfied when all of the 24 interns

integrate instructional television into their final curriculum design. The

integration of instructional television will be evidenced in the thematic unit designed during the final third of the course. The unit required the interns to identify activities that met the unit's objectives in each of the following areas, language arts, social studies, science, math, and reading. The video technology could have appeared anywhere within the sample lesson but for the most effective use of the technology its integration should occur within any of three instructional steps, the anticipatory set, the input, or within the guided review.

During the anticipatory set, the technology must focus the learner and orient him/her on what is to be learned. When presented effectively and creatively, this focusing step will make subsequent learning more efficient because the student is prepared to engage in the activities of the lesson. A motivated student is a powerful force and it is the educator's task to develop and channel this force.

The anticipatory set can use technology in a variety of ways: a short sequence from a popular movie, a scene from a children's program, or something made within a local studio. Whatever the interns select, it should be a building block to positively influence the way the students approach the lesson.

The interns must always remember that the method of transferring

information must match the students' experiences. Within the input segment of the lesson, the technology must convey the actual message of the lesson. The students must be able to obtain all the required information from the technology. The video technology must convey the image of what is being covered and then it must provide the information in a usable fashion. The curriculum must be highly interactive and not a static presentation. For it is within the input sequence that the child will obtain the information that will be processed, interpreted, and later used within the problem solving process.

The final acceptable location for the technology is in the guided review. Here the interns would use the video technology to supplement their formative check of the students' understanding of the lesson. The use of the formative check will help to ensure that the students are not pushed to new topics and objectives before they achieve success in the task at hand. The video technology can be used to present situations, questions, or provide the stimulation for creative writing. The intern needs to see that it is not the intent of ITV to supplant traditional classroom and laboratory teaching methods, but that it aids them in furthering student success (Gale, 1976).Whatever the style of the

presentation, it is essential to have frequent formative checks before the end of unit and the guided review step can provide the final check on lesson comprehension.

When the intern presented the sample lesson to the class this writer scored the presentation using the instructional strategy checklist (see Appendix D). For the presentation to be acceptable it had to score a minimum of 30 out of 37 points. A point was given for each item checked on the instructional strategies checklist. The scoring was on both the unit and an individual lesson. During the lesson this writer watched for the implementation of the outline and the instructional process. Within the unit evaluation a check was given for each curriculum area integrated, for each tradebook used, for each modality, and for each technology.

The use of the video technology was dependent upon the comfort level of the intern with the content and the technology. Being comfortable with content has always been a concern of the new teacher. It has been the feeling of inadequate scientific knowledge on the part of the educator that has resulted in poor attitudes and the incidental instruction of science (Vitale, 1992). To assist in the task of reducing content anxiety all the interns had to sign-in and utilize the educational

resource room within the institution's service area. This resource room was located within this writer's office on campus and housed a variety of instructional resources for the interns to utilize.

The room had a variety of resources for the interns. It had a video camera, instructional television programs (ITV) with teacher manuals, sample classroom activities both on video and paper, and supportive materials such as poster and technical and non-technical resource books. The resource room had a catalog listing the complete inventory of available resources. The interns could sign-out any of the items listed above to assist them in the completion of their final project and it illustrated to them how useful a teachers' resource room could be in the implementation of their instructional objectives. For the interns to be given credit for utilizing the resource room, they had to sign-out at least three instructional television videos and two resource manuals or a video camera. If the interns wished to sign-out an item they had to complete the necessary information on the resource room sign-in/out sheet (see Appendix E). This sheet was kept within the resource room on the writer's desk.

The third expected outcome was looking for a positive attitude toward technology. During the final session of the semester the interns

were asked to write a reflective paper sharing their attitude toward technology. The writer collected the papers and scored them using a five point Rubric Scale (see Appendix F). A score of three reflected a positive attitude.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solutions

The intern's within the teacher certification program at this writer's institution have not been utilizing technology within their elementary instructional science curriculum unit. They have not demonstrated an awareness of the need to utilize various modalities for effective instruction. Using the basic elements of effective teaching: careful goal identification, task analysis, appropriate levels of complexity, clear instructions, and frequent feedback (Orlich, Harder, Callahan, Kauchak, & Gibson, 1994) is only the first step. Understanding how to use the strategies that bring about student success is next. In teacher training it is our obligation to provide the proper atmosphere in which to nurture the developing philosophies of education that are emerging within our class.

Within chapter two, this writer identified three possible reasons for the lack of technology integration by the interns. This writer will review each area and the possibility of a solution. The traditional, but poor, college instructional setting provided by this writer's institution

and institutions nationally (Pettersson, 1993 ; Goodlad, 1984) is not conducive to the modeling of behavior and strategies necessary for a methods course. Having an instructional methods course within a traditional classroom setting is what has happened in the past. What is needed is a setting similar to that in which the interns will be working. But it is impractical for the institution to provide a classroom with the standards asked for by the National Science Teachers Association such as: its own resource library, built in exhaust systems, locked metal cabinets, outdoor area, temperature controlled chambers, computer terminals for every two students, a stationary VCR/monitor, cable, telecommunications wiring, and much more (Showalter, 1984). The budgetary limitations restrict such a classroom setting within the institution's campus or the rental of a classroom from a school district.

Within institutions, the design of a program and the administrative reality of a program are sometimes different. This institution requests that the students complete a series of pre-requisite courses before taking the writer's methods course. This is not occurring and the students are entering the course unprepared for dealing with the child through various media. They are not aware of the concept of learning styles and channels of learning and are supporting their philosophies of instruction

with personal experiences. The use of technological resources to meet a child's learning style is far beyond their stage of development as an educator. This situation is beyond the writer's influence in that the decision to run a course, or hire additional staff is carried out at the Dean's level. The ability to have the students sensitive to the learning styles would be wonderful, but the situation will remain the same until the students are made to conform to the program's suggested course sequence.

The third possible cause presented in chapter two was the lack of technological equipment. Presently this writer must bring in all the technology that will be used within the evening presentations. The only equipment made available is a VCR/monitor. There are no laser CD players, portable computers, LCD's, CD-ROM's, telecommunication lines, or working satellite dish on campus. Technology is progressing at such a rate that a piece of hardware currently has a durable technological life of six months (T. Goodman, personal communication, November 15, 1993). Beyond this time period a new piece of hardware is available that is more advanced. With such a short span until obsolescence, many institutions do not want to get onto the technology tread mill. This writer's institution is no exception to this trend. No

funds are in sight that will provide the necessary hardware to make the interns technology literate.

Description of Selected Solution

A solution to this writer's problem was to listen to Cooney (1993), utilize what is available, cost effective and familiar. This writer utilized television as an instructional technology. With 97% of the schools having televisions and only 19% having videodisc players and 7% having an interactive video system (Bruder, 1992) instructional television met her criteria for effective media utilization. The television monitor and VCR are the only pieces of technological equipment provided by the writer's institution. Instructional television may seem antiquated compared to technological terms such as videodisc, interactive CD's, and quick time reports, but to utilize this expensive technology requires the same fundamental knowledge of the instructional process as it takes to effectively use the VCR and ITV presentations. Most of the hardware we associate with state of the art is not within our public school classrooms according to Hannah et al. (1993).

Once the interns have an understanding of the instructional process

and how technology can effectively supplement it, they can move on to the more expensive hardware. But for the present television is the effective technology to develop these skills.

This technology is not only available, it is effective. A conclusion drawn from the Hoijer (1989) study of cognitive processing of television programs concluded that viewing television is a complex process. To best determine its value the educator must consider both the individual and the program's format and content. He also found that there is a close relationship between comprehension and television viewing that can engage the viewer in deep cognitive activities when the programing provides an expository discourse.

For the interns to develop an awareness of the technology and its capacity, they must feel comfortable with its operation, have access to the hardware and supportive software, and see its application in use within the context of the instructional process. Hoover (1968) showed that in teacher training the first step in learning is dependent upon the learner's careful observation of a more experienced person, a model, performing the specific behavior that was to be learned.

To met the practicum outcomes this writer completed the following solutions to the problem:

1. the writer developed an educational partnership with the local Public Broadcasting Station to train interns as to the available technology resources such as ITV programs and manuals,

2. the strategies and techniques of using instructional television's video technology were modeled during the science methods course,

3. to facilitate the use of video technology the writer in cooperation with public broadcasting created a technology resource facility in which the writer and interns could develop instructional strategies and presentation skills.

Report of Action Taken

Public broadcasting has a long tradition of educational service to the community. Research in the 1960's and 1970's illustrated the positive effects of Sesame Street on a child's ability to recognize numbers and letters. Current research illustrates the natural relationship between ITV and the classroom. The work of Reiser, Williamson, and Suzuki (1988) has illustrated that programs like Sesame Street are most

effective when the viewing is followed up by questions from an adult. With public broadcasting as the presenter and the teachers as the adult, the integration of ITV and the teacher, as facilitator, will have positive results in the classroom. The training provided by the local station took place on the site within the local studios and on campus.

The major component in the completion of this process required the working cooperation of those within the public broadcasting system. The local public broadcasting station has an instructional television office and is currently working with 36 school districts which account for nearly 4500 classroom educators (Bechtel, 1993). This writer presented this proposal to the ITV manager and requested assistance in the following: on-site training of interns as to the resources of their facility, how public broadcasting perceives the use of ITV, how it is currently being used with the schools, and in the duplication of ITV videos for the writer's resource room.

The modeling of how to integrate video technology occurred throughout the course but the major focus was during the first four weeks (see Appendix G). In the first class this writer demonstrated the integration of video technology as a part of the opening course presentation. The main topics were cognitive development and the

process skills within the science curriculum. This writer used presentations from the ITV series Physics Demonstration within the anticipatory set to introduce a selection of process skills. Physics Demonstrations is a 48 part ITV series of 15 minute programs that demonstrates a variety of physics concepts.

The topic for week two was the instructional process and video technology was used to model its applications within a lesson. The writer used segments from the award winning pre-school program, Sesame Street, for the anticipatory set. Newton's Apple, a 1/2 hour series using guest scientist and full scale models to explain science concepts for grades 4-8, was used within the input portion of the lesson. To demonstrate checking for understanding and guided practice this writer used the ITV program Simple Machines. This is a series of 15 minute animated presentations used to illustrate the science concept of work.

The on-site training occurred during course week three when the class was held at the public broadcasting station. At the station the Director of ITV presented the interns with a first hand views of how the programs are made, selected, and presented to the classrooms. At the station, this writer reinforced the concepts of week two by

reviewing when and how to use this technology within an instructional presentation.

The final week of purposeful modeling was week number four. During this session the interns observed this writer integrate video technology in the lesson and introduce the resource room and its materials. This presentation was a comprehensive view of how to integrate computer technology and video technology into the learning process. Using an Apple LCII, LCD, overhead projector, MECC software Rocket Factory, VCR/monitor, and the ITV program Space Education, this writer presented a fully integrated lesson using technology to introduce the scientific method and its application. Space Education was used within the anticipatory set, input, and closure. It is a program which uses actual NASA video footage to illustrate the affect space has on matter.

Using the preceding weeks as a model the interns then had the task of applying the information and teaching strategies. They were to spend the next nine weeks developing a thematic unit which would incorporate video technology. At that point the writer made one scheduling adjustment, the instructional presentation of how to design a thematic unit was moved up, from week nine to week five. Using this

instructional background the interns developed and presented their
thematic unit with video technology integration during the final two
weeks of the course. A checklist was used to evaluate the interns'
presentations (see Appendix D). It focused on the correct use of the
instructional process, the knowledge of the concept within the lesson,
and the ability to integrate video technology in the thematic unit.

The technology resource room was completed by week four of the
course. A catalog with the complete listings of video resources was
distributed that week. The resource room was housed in this writer's
office and contained: instructional television video tapes and teacher
manuals (see Appendix H), a video camera, and VCR with monitor.
The resource room was open Tuesday, Wednesday and Thursday
evenings from 4:00 PM to 6:00 PM and Sundays from 1:00 PM to 3:00
PM. The resource room was not used to its fullest capacity due to the
location of the course. This course was given off-campus at a location
over one hour away. Some interns did not want to come to campus and
asked to have tapes delivered to the off-campus site the night of class.
To accommodate this request the interns had to phone in their order two
days before class and the tapes with manuals were delivered at class.
This worked fine but it did limit the interaction of this writer with the

interns as they previewed the video. The interns still signed the items out on a resource room sign-out sheet as a record of their resource utilization.

CHAPTER V

RESULTS, DISCUSSION AND RECOMMENDATIONS

Results

This writer was concerned that the interns within the teacher training program were not integrating video technology into their elementary science curriculum units. To implement a possible solution this writer developed a partnership with the local Public Broadcasting Station, integrated and modeled the desired instructional strategies into course presentations, and developed a video technology resource facility on campus. These solutions were successfully used to implement the 3 outcomes of the practicum.

Outcome 1:   To have the interns use the medium of video technology within the instructional portion of a thematic instructional unit practice lesson and score a minimum of 30 on the instructional strategy checklist was accomplished.

All 18 interns obtained a score of 30 or above on their instructional unit. The score distribution was: 5 interns scored 30, 3 interns scored

31, 4 interns scored 32, and 7 scored 33.

There were 5 areas within the instructional unit that were scored (see Appendix D). In the category of curriculum, the interns integrated a mean of 8.2 areas of the 9. The number of tradebooks to be used within the unit was not specified but the interns used a mean of 1.4 tradebooks per unit. All interns utilized the 3 modalities within their unit. The area of technology strategies was the broadest of the categories. This writer provided a list of 14 technologies (see Appendix D) as identified by Pettersson(1993) as those most used by classroom educators. The interns had a mean technology utilization of 12.5 strategies. The main emphasis for this practicum was the utilization of video cassette tapes and within this category all 18 scores represented utilization of video technology. The final area, lesson construction, showed all 18 interns using each of the 7 instructional steps (see table 1).

Outcome 2:   To have the interns sign-out at least 3 ITV videos and 2 resource manuals from the resource room.

This outcome was exceeded, the interns signed-out more videos and manuals than cited in the outcome. The interns signed out a mean of 4.5 tapes, 4 manuals, and .16 video cameras (see table 2).

Outcome 3:   To have 15 of the 24 interns reflect a positive

attitude and willingness to use technology by scoring a

minimum of 3 on a Rubric Scale of 0-5.

Table 1

Mean Instructional Strategies Used by Interns Within Unit

Areas within unit	Mean	Possible
Curriculum areas	8	9
Tradebooks	1.3	1
Modalities	3	3
Technologies	12.5	14
Lesson	7	7

This outcome was accomplished with all 18 interns scoring a 3 or above

on the Rubric. These results represent the positive impact of this

practicum with 3 interns scoring 3, 13 interns scoring 4, and 2 interns

scoring a 5.

The writer must identify the difference in proposed outcome

numbers of 24 interns and the actual outcome numbers of 18 as a result
of course registration. When the practicum was written the writer used
the registration limit of 24 as a projected enrollment. The actual
enrollment was 18.

Table 2

Mean Number of Sign-outs From Resource Room

Resource	Mean	Required
Video tapes	4.5	3
Manuals	4	2
Video camera	.16	0

Discussion

This practicum established a proactive environment that encouraged
the interns to focus their energy towards changing the elementary
classroom described by Kidder (1989) as an antiquated room occupied
by a single female presiding over a group of children, to an

environment where technology expands the walls and transports the child to other worlds. Throughout the semester the interns illustrated their willingness to accept and use technology. The interns' ability to incorporate technological strategies improved as the steps of this practicum were completed.

The on-site training at the local Public Broadcasting Station was well received by the interns and the station. The ability to view behind the scenes of the broadcasting industry was enlightening and thought provoking. The staff provided technical information, managerial decision making procedures, the legal aspects of user rights, and school memberships. This session provided an excellent follow-up to the first two class sessions and a solid base for future class discussion.

The interns' interest in video technology grew as the semester progressed. The pre-self analysis complete during week 1 indicated that only 3 of the 18 interns felt "comfortable" using video technology within the instructional process. The reflective attitude paper written on week 14 revealed that all 18 interns expressed a positive attitude toward technology. This writer contributes this change to the positive and effective modeling shown during class, the exposure to other professionals, and access to the video resources.

The resource room was a valuable resource for professional development. A catalog listing ITV programs was distributed to each intern. It provided the interns with the program objectives, number of programs in the series, program length, production company, availability of manuals, and individual program titles. With class being off campus, the catalog provided the class with the necessary link to the resource room.

The walk-in visitation was limited. Only 5 of 18 interns came to the resource room. This writer believes that this was due to the course being offered off campus and the walk-in utilization would have been greater if the course were held on-campus. It was necessary to make procedural adjustments in the use of the room. The access times stayed the same but this writer did deliver tapes to the class site.

The practicum provided everyone with the opportunity to grow professionally. The interns grew through their exposure to appropriate modeling situations and the opportunity to utilize resources from public broadcasting. The local broadcasting station had the opportunity to share its mission directly with those whom they service and work with in an academic environment that fosters innovative thinking. The college's training program was enhanced through the cooperative

working environments of academia and the public sector. The practicum was so well received by all involved that this writer has been invited by the local station to continue this cooperative educational arrangement next semester.

Recommendation

This was a very productive and positive experience for all involved but the following recommendations would improve future implementation:

1. the course should be taught on-campus so that the resource room is more accessible to the interns,

2. purchase a case to transport the video cassettes and manuals to the off-campus site,

3. move the introduction of the thematic unit from week 9 to week 4.

Dissemination

This practicum has provided a positive impact upon all participants and its value to the educational community can continue with proper dissemination. This writer plans to disseminate this practicum in the

following manner:

1. submit this practicum to an appropriate professional teacher training journal for publication,

2. offer to present the outcomes to the Instructional Television board at the local public broadcasting station and,

3. present the outcomes to the college faculty at a future staff meeting.

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APPENDIX A

SCIENCE / HEALTH COURSE
WEEKLY OUTLINE

Science / Health Methods Course

Weekly Outline

Week 1   Cognitive Development and
                Science Teaching
          Learning Science Process Skills

Week 2   PDE Guideline
          Chapter 3,5 &6 Rules and Regulations

Week 3   Application of Cognitive Research
          Developmental Theorist and the
                Teaching of Science

Week 4   Direct, Explicit or Exposition Instruction
          Guided Discovery Teaching / Learning

Week 5   Cooperative Learning
          Thinking Skills/ Levels
          Questioning / Listening Techniques

Week 6   Planning and Classroom Managemen
          Translating Units into Daily Lesson Plan Objectives

Week 7   Assessment
          Cognitive Domain
          Affective Domain
          Psychomotor Domain
          Authentic Assessment and Chapter 5 Regulations

Week 8   Mid-term examination

Science / Health Methods Course

Weekly Outline

Week 9   Integration Techniques
            Thematic Units

Week 10   Using the Tools of Science

Weel 11   Adaptive Strategies
            Inclusion Techniques

Week 12   Science Concept Demonstration

Week 13   Science Concept Demonstration

Week 14   Presentation of final - Thematic Unit

Week 15   Presentation of final - Thematic Unit

APPENDIX B

INSTRUCTIONAL PROCESS REVIEW GUIDE

Instructional Process
Review Guide

Name_____   Date of Observation_____

Subject: Science or Health **circle one**   Grade Level:_____

School/District _____

Time of Day _____   Number of Students_____

Classroom Teacher's Years in the Classroom_____

Unit of instruction:_____

Lesson Number:_____

Was there a bulletin board to support the unit/lesson?   **circle one** Y   N

Following are the parts of the instructional process. Indicate if it was used in the lesson and how it was implemented by the classroom teacher.

Anticipatory Set
___Y ___N   _____

Statement of Lesson
___Y ___N   _____

Input
___Y ___N   _____

Modeling
___Y ___N   _____

Checking for Understanding_____
___Y ___N

Guided Practice
___Y ___N   _____

Independent Practice
___Y ___N
_____

Closure
___Y ___N
_____

What was the primary modality of the lesson?_____

What technology was used within the lesson?_____

What item(s) would you like to remember to use within your classroom?

_____

APPENDIX C

PRE-COURSE SELF ANALYSIS FORM

Name _____

Pre-course self analysis form   Spring 1994

Place an X under the area that best describes how you feel about
the item as it applies to you within the classroom as a facilitator of
learning.

	Comfortable	Uncomfortable	Lack this skill	Not Sure

Concerning my :

ability to organize
my classroom for the
first day/week of
school   _____   _____   _____   _____

ability to identify
community resources
for instructional
support.   _____   _____   _____   _____

ability to identify the
steps to the instructional
process and their value
to the student   _____   _____   _____   _____

ability to use the following
technologies within the
instructional process:

bulletin board   _____   _____   _____   _____
computer assisted
    instruction   _____   _____   _____   _____
film strips with
    sound   _____   _____   _____   _____

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	Comfortable	Uncomfortable	Lack this skill	Not Sure
overhead transparencies	_____	_____	____	____
motion pictures	_____	_____	____	____
closed circuit tv	_____	_____	____	____
mobiles	_____	_____	____	____
video cassette tapes	_____	_____	____	____
maps	_____	_____	____	____
cassettes,audio	_____	_____	____	____
phonograph records	_____	_____	____	____
simulation games	_____	_____	____	____
film strip	_____	_____	____	____
35 mm slides with and without sound	_____	_____	____	____
ability to integrate tradebooks	_____	_____	____	____
ability to develop a thematic unit with science as the major topic.	_____	_____	____	____
ability to use portfolio assessment techniques as an evaluation instrument	_____	_____	____	____

	Comfortable	Uncomfortable	Lack this skill	Not Sure
ability to change students using the expositional teaching strategy.	_____	_____	____	____
understanding of and ability to implement chapter 3,5, & 6 within my classsroom	_____	_____	____	____
ability to develop activities that support the STS approach	_____	_____	____	____
ability to identify two everyday locations within my community to find items to support a science program	_____	_____	____	____
ability to list the names of five research journals for that support science instruction	_____	_____	____	____
ability to list the names of at least three researchers of classroom instructional practice	_____	_____	____	____
ability to correlate science activities with cognitive stage of development	_____	_____	____	____
abiltiy to identify the learning modality of the child and correlate activities	_____	_____	____	____

APPENDIX D

INSTRUCTIONAL STRATEGY CHECK LIST

Intern's name _____
Thematic Unit

Instructional strategies check list

Unit title _____

Curriculum areas integrated into unit:
___ science   ___ social studies   ___ math   ___ reading

___ health   ___ spelling   ___ art   ___ music

___ language arts

Tradebook (s) used within unit:
Title: *Author:*

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

Modalities used within unit:

_____ Tactical   location_____

_____ auditory   location_____

_____ visual   location_____

Intern's name

Unit title_____

Technology used within unit:

___ bulletin board
___ computer assisted instruction
___ film strips with sound
___ overhead transparencies
___ motion pictures
___ closed circuit tv
___ mobiles

___ video cassette tapes
___ maps
___ cassettes, audio
___ phonograph records
___ simulation games
___ film strip
___ 35 mm slides w or
     w/o sound

Lesson:

Comments on process

_____ Anticipatory set

___ 3-5min. _____ modality
_____

_____ Statement of objectives

__ written ___ verbal
_____

_____ Input

_____
_____

_____ Check for understanding

_____
___ response cards: show design

_____ Guided practice

_____

_____ Independent practice

_____

_____ Closure

_____

APPENDIX E

RESOURCE ROOM SIGN-IN/OUT SHEET

RESOURCE ROOM SIGN-IN/OUT SHEET

NAME Print	DATE	TIME in	TIME out	ITEM OUT write name	ITEM IN initial

APPENDIX F

ATTITUDE PAPER RUBRIC

REFLECTIVE ATTITUDE RUBRIC
Primary Trait

Intern name _____

	Standards	Score

Point value

0	Intern did not turn in the the reflective attitude paper.	_____
1	Completed reflective attitude paper but indicates no positive attitudes or willingness to try using technology in the future.	_____
2	Completed reflective attitude paper and indicates increased interest in learning about technology but continues to have reservations about his/her use of within the instructional process.	_____
3	Intern indicates that his/her attitude toward the use of technology within the instructional lesson is now positive and would like to learn more.	_____
4	Intern indicates that they have a positive attitude toward technology and would like to use it in the field experience or some future practice lesson.	
5	Intern indicates a positive attitude and sites examples of how they plan to incorporate technology into a future instructional lesson.	_____

APPENDIX G

REVISED SCIENCE / HEALTH WEEKLY
COURSE OUTLINE

Science / Health Methods Course

Weekly Outline

Week 1   Cognitive Development and
          Science Teaching
          Learning Science Process Skills

Week 2   PDE Guidelines / Chapter 3,5 &6 Rules and Regulations
          The Instructional Process

Week 3   On-site training at WITF studios
          Application of Cognitive Research
          Developmental Theorist and the
          Teaching of Science
          Direct, Explicit or Exposition Instruction
          Guided Discovery Teaching / Learning

Week 4   Using technology Within the Instructional Process
          Resource Room - Uses and Application

Week 5   Cooperative Learning
          Thinking Skills/ Levels
          Questioning / Listening Techniques

Week 6   Planning and Classroom Managemen
          Translating Units into Daily Lesson Plan Objectives

Week 7   Assessment
          Cognitive Domain
          Affective Domain
          Psychomotor Domain
          Authentic Assessment and Chapter 5 Regulations

Week 8   Mid-term examination

Science / Health Methods Course

Weekly Outline

Week 9   Integration Techniques
            Thematic Units

Week 10   Using the Tools of Science

Weel 11   Adaptive Strategies
            Inclusion Techniques

Week 12   Science Concept Demonstration

Week 13   Science Concept Demonstration

Week 14   Presentation of final - Thematic Unit

Week 15   Presentation of final - Thematic Unit

APPENDIX H

INSTRUCTIONAL TELEVISION VIDEO TAPES
FOR RESOURCE ROOM

INSTRUCTIONAL TELEVISION VIDEO TAPE LIST

This program list represents the ITV programs available within the resource room. The resource room was open Tuesday, Wednesday, and Thursday evening from 4:00 PM to 6:00 PM and Sundays from 1:00 PM to 3:00 PM.

Program	Number/ Length	Subject Area	Grade Level
All About You	5/15	Health	K-4
Camp Willie	10/15	Science	K-3
Discovering Pets	5/15	Science	K-3
Eat Well, Be Well	8/15	Health	1-6
Featherby's Fables	10/15	Science	K-3
Harriet's Magic Hat	12/20	Science	3-6
Inside Story with Slim Goodbody	10/15	Health	K-6
Newton's Apple	30/40	Science	3-8
Outside Story with Slim Goodbody	22/30	Science	K-6
Reading Rainbow	30/38	Science	3-8
Science Alliance	5/15	Science	3-6
Simple Machines	5/15	Science	3-6

Program	Number/ Length	Subject Area	Grade Level
Space Education	5/13	Science	5-10
The Human Community	6/15	Science	4-6
Universe and I	8/15	Science	4-6
Trails	10/15	Science	3-6
Up Close and Natural	8/15	Science	3-6
You, Me, and Technology	10/15	Science	4-6
3-2-1 Contact	16/15	Science	3-6

ERIC