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AUTHOR Bedell, Jacqueline
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ABSTRACT

This study investigated how school principals and media specialists in elementary and secondary schools perceive the preparation of pre-service teachers regarding media and technology and specific skills that should be required of beginning teachers. A survey instrument was administered to 83 principals and 83 media specialists employed at schools in Georgia. Principals and media specialists were not selected from the same building. Responses were received from 55 principals and 53 media specialists. Findings indicated that both groups felt that beginning teachers should be able to demonstrate skills in media and technology and that emphasis should be placed on computer literacy and the ability to operate and use computer software programs in the classroom. Responses by principals employed in small school systems indicated that less emphasis be placed on demonstration of production skills using technology. Close analysis of the media specialists' responses found that small school system specialists felt that the operation of a camcorder was more important than to those in middle or large sized systems. In addition, both groups felt that ability to select, use, and integrate appropriate instructional software in the curriculum was an important skill for beginning teachers to demonstrate. (Contains 18 references.) (JB)

Perceptions of the Preparation of Pre-service Teachers in the Use of Media and Technology

Jacqueline Bedell

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INTRODUCTION

Are teachers being prepared to use media and technology effectively in the classroom? This question has been echoed by educators from the elementary schools through the universities, as well as by pre-service teachers. Current responsibility to provide leadership in preparing pre-service teachers to use media and technology in the Information Age is cited by Brooks and Kopp (1989) as the professional responsibility of teacher educators.

If public school students are to successfully enter the 21st century, teachers must provide them with the instruction to apply the principles of media and technology. In order for teachers to implement this process they must be more than minimally prepared. Bitter and Yohe (1989) indicated that teacher education programs have the resources to reach pre-service teachers and provide them with the instruction and knowledge to implement the use of media and technology in the classroom. Bitter and Yohe further stated that, in their opinion, the integration of media and technology into a teacher preparation curriculum is the "single most pervading issue" relating to technology today in colleges of education.

Current research reflected similar broad approaches to a media and technology curriculum by colleges of education. However, there is a very diverse emphasis on specific focus. Persky (1990) summarized one viewpoint by stating that courses in media and technology should have an instructional focus in order to guide pre-service teachers to consider the curriculum and the student before integrating the technology into their instruction. Following this process would help the student to successfully master curriculum goals.

Placing the emphasis on the mechanics of computer technology and its applications was the approach taken by Handler (1993). Her research indicated that pre-service teachers feel unprepared to apply the use of

computers in the classroom, especially with the new and emerging technologies which include CD-ROM, laser discs and on-line communication. Several researchers (Carlson, 1991; Criswell, 1989; Falk & Carlson, 1992; Newren, Waggener & Kopp, 1991) believed that the ability to utilize the equipment from a "hands on" approach was the most significant.

Consequently, as a result of the different theoretical approaches, a number of questions have been raised by public school and higher education personnel regarding the focus of the media and technology curriculum in teacher education programs. Today, educators basically agree that preparing pre-service teachers to use media and technology in the classroom should be one of the goals of teacher education programs in the Information Age (Harrington, 1993). How they elect to achieve this goal is the ultimate question.

STATEMENT OF THE PURPOSE

The purpose of this study was to investigate how school principals and media specialists perceive the preparation of pre-service teachers regarding media and technology and what specific skills they feel should be required when employing beginning teachers. This research will contribute to the field of educational technology and help university faculty as they re-evaluate their pre-service teacher education curriculums and restructure media and technology courses to prepare teachers to enter the "electronic classrooms" which are evolving in the public schools.

STATEMENT OF THE PROBLEM

Universities throughout the country have tried to address the problem of beginning teachers feeling unprepared to use media and technology by focusing on the internal curriculum offered to pre-service teachers. An attempt to look at the problem from the principals' and media specialists' point of view is

overdue. Public school principals are in a unique position to directly observe the needs of the student population on a daily basis throughout the academic year. A principal's first hand experience should be of vital interest to faculty and university administrators when they are reviewing the media and technology curriculum to be offered pre-service teachers. The input from media specialists with regard to the direct observation of beginning teachers in the operation of equipment and the selection and production of media and technology would be advantageous to university personnel in planning pre-service teacher instruction from a "hands on" perspective.

The focus of this research studied the emphasis that public school principals and media specialists place on the following aspects of media and technology for beginning teachers:

1. the technical experience required to select and utilize media technology in the classroom.
2. the application and integration of media and technology to support the local curriculum.
3. the essential competence in the use of computer management technology.

LIMITATIONS

The instrument was administered to principals and media specialists employed at schools within the First Congressional District of Georgia. Therefore, the results of the study may not be generalizable elsewhere. Principals and media specialists may been unfamiliar with some of the emerging technologies which may have lead to their answering paris of the questionnaire inaccurately or not at all.

SIGNIFICANCE OF THE STUDY

Though the use of a questionnaire, the researcher determined the perceived importance of technology skills which principals and media specialists felt beginning teachers should be required to demonstrate. The dissemination of this information will help higher education faculty and administrators focus on the technologies to be emphasized and integrated into educational technology courses, methods courses and field based practice as these programs move into the 21st century.

REVIEW OF THE LITERATURE

Background

A review of the literature revealed the adherence to a broad application of media and technology in the classroom and suggested that pre-service teacher instruction should integrate all types of media. The inclusion of computer technology, sophisticated multi-media, networking and the design, production and use of local media (overhead transparencies, bulletin boards, instructional handouts and activities), and audio and video technology all contribute to this use. These ideas were reiterated in a number of studies which revealed positive results when a number of senses are used in the learning process to produce a greater retention of knowledge. Kemp and Smellie (1989) concurred by indicating that increasingly positive results are the outcome when instructional media and technology are used appropriately in the classroom.

In the past, some of institutions compressed the preparation of pre-service teachers into a single technology course for three to five hours of credit, while others introduced the use of technology across the curriculum using primarily software application programs in math, social studies, and reading courses. There appeared to be two approaches to integrating media and technology into a pre-service teacher curriculum: (1) the basic computer literacy course which includes producing material for classroom application using the computer as a tool and (2) the integration of computer software programs in methods courses.

Computer Literacy

Criswell (1989) stressed the importance of a focus on a comprehensive computer training program which he stated must provide the fundamentals of course work and experience to insure a competent level of basic skills. The

ability to understand the basic operation of a microcomputer including a level of expertise to adapt basic programs to the classroom should be a major consideration. As a result, university administrators and faculty have begun to examine different approaches in preparing pre-service teachers to demonstrate computer literacy on the functional level, and school administrators across the United States are inserting statements in the job descriptions for beginning teachers that require the demonstration of computer literacy as a prerequisite of employment.

Educational technologists in the field have suggested a variety of models which implement instruction in computer technology to provide a sense of preparedness for pre-service teachers. Oke (1992) described a two-part model which would include a course in computer technology. This instruction would provide a fundamental knowledge of basic computer skills (word processing, spreadsheet and database). Students would be required to produce materials for the classroom (instructional handouts and instructional activities) on the computer as part of the course requirement.

The second part of the model would require professors to use computers in their classes modeling applications in math, science, social studies, etc. Students would then be required to use software programs in methods and block courses as a supplement to their instruction. Prior to using the software they would be asked to select and evaluate individual programs for content, grade level, and technical quality. This specific use of computers which was also cited by Kettinger (' '91) could be a catalyst to permit university faculty to review and rethink their courses to allow pre-service teachers to experience new learning opportunities.

Educational technologists place a high priority on software program evaluation. The application of both basic computer skills and the use of

software programs to a methods class is an effective and creative procedure for instituting this specific requirement. Handler (1993) and Munday, Windham and Stamper (1991) pointed out that the required use of computer technology in a methods class provided additional hands-on experience for the pre-service teacher and allowed them to observe faculty modeling computer use for direct instruction.

Instructional Design

In addition to preparation in computer literacy, pre-service teachers should be capable of focusing on a systematic plan to guide them in the design of their instruction so that the use of computer technology will be integrated into the curriculum to support the stated learning objectives. The technology then becomes a tool to be used in the delivery of the instructional plan and not solely the instruction alone.

Persky (1990) regarded the process of using technology to assist students in mastering the curriculum an important goal. Computers used by themselves simply to run programs do not improve student learning. The instruction of pre-service teachers must focus on teaching and learning to use the computer as a tool to supplement instruction. When computers are used in this format in the classroom, teaching becomes a consulting relationship with the teacher acting as a facilitator.

In a study designed to investigate the effects of interactive multi-media on learning and attitudes of elementary education majors, Carlson (1991) noted the factors that might influence learning (design of instruction, format for learning and matching of learning style to instruction). The survey was completed by 53 pre-service teachers in a field experience class. Analysis of the data yielded two distinct groups. The first group displayed characteristics

attributed to deductive learning style and the second revealed characteristics with inductive learning style. The subjects then participated in small group and individualized instruction. Three types of criterion measures were used as evaluation tools (concept test/observation skill evaluation, attitude and overall satisfaction survey and open-ended questions). Results of the dependent variables (observation, attitude toward control over pace/sequence of instruction, overall satisfaction and content) were significantly affected by matching learner style to instruction and format. While the actual design of the instruction itself did not significantly impact on the results, it must be noted that learner characteristics, which are included in the basic concept of instructional design, were significant. The results of the study indicated that the implementation of new and innovative ways to design instruction using a systems approach should be explored and incorporated in pre-service teacher media and technology courses.

Based on the above study, it appeared that the instructional design and development process is an important factor in acquiring the skills to promote success in the use of media and technology by pre-service teachers. By learning how to develop a systematic plan incorporating learner characteristics, objectives and content, beginning teachers will feel more comfortable in attempting to integrate the use of media and technology into the lessons which they will teach students.

Gooler (1989) stressed that a serious commitment to an instructional design and development process by universities in planning the integration of technology in courses for pre-service teachers is essential. Without a systematic plan, learning outcomes will probably not achieve a high success rate. University administrators and faculty must be committed to the idea that learning to use technology requires a systematic plan of instruction. This is

especially true in light of the ever emerging new technological innovations such as CD-ROM, laser discs, and virtual reality.

Emerging Technologies

An explosion of new and far reaching technologies incorporating all forms of media are descending on our world. CD's the size of sliver dollars store unfathomable amounts of information. Satellite dishes provide interactive telecommunications between classrooms both locally and globally. Virtual reality devices allow individuals to personally experience real world situations without leaving the classroom. How will the academic community prepare pre-service teachers to productively use all of these sophisticated innovations?

The answer to this question has to include the exposure of pre-service teachers to the use of multi-media. As Falk and Carlson (1992) suggested in their theory into practice experiment, teachers generally teach as they are taught. Therefore, including instructional designs that use multi-media as teaching and learning tools should be integrated into the curriculum for pre-service teachers. Unless this is accomplished the potential for creative use of multi-media technology will not be realized.

Emerging technologies include a variety of communication formats. One of the most useful and cost effective applications is information retrieval which allows people to access vast amounts of pertinent information in a relatively short time through telecommunication networks throughout the world.

DiMartino (1991) reported on the KIDLINK project, which is an example of a multi-media approach to telecommunications promoting multi-cultural and technological literacy. The project connects students and teachers in a New York City elementary school with student teachers and faculty in a local college via a computer. This type of communication technology provides both the

pre-service and beginning teacher with the tools they need to promote information retrieval by students in the classroom through direct interaction with college faculty. It also makes the resources of the college library available to the students in the classroom. This training can ultimately be transferred to long term real life applications. It is therefore imperative that pre-service teachers be taught to investigate and use communication technology (modems, fiber optics, etc.) in order to link their future classrooms to the real world.

Hypermedia is an interesting and effective way to introduce segments of emerging technologies. In a course developed by Hochman, Mauer and Roebuck (1993), students were required to produce a HyperCard stack integrating the content areas of two methods block courses. The goal of the course was to provide a number of technology experiences and integrate those experiences into a curriculum program. The final products resulted in stacks which were non-linear in design and included graphics and student interaction.

Conclusions which can be drawn from the Hockman, Mauer, and Roebuck (1993) study indicated that the integration of emerging technologies into the curriculum for pre-service teachers permit models to be used as both teaching and learning tools. The professional development skills necessary for teaching are assimilated along with the technological tools that are required by beginning teachers.

Preparation Studies

A study completed by Handler (1993) supported a three part computer technology experience and revealed that of 133 education graduates, only 18.8% felt prepared by their pre-service instruction to effectively use computers in the classroom. Additional results of the survey indicated that three

factors determined whether or not teachers felt prepared. Completion of a course on the introduction to computers in education was cited first, followed by the degree to which computers were used during methods block classes, and finally the observation and use of computers during student teaching field experience. The confidence, or lack of confidence, in using computer technology seemed to directly impact whether beginning teachers used computer technology in their own classroom. Handler concluded from the study that university education departments may not be sufficiently preparing pre-service teachers to use computer technology if they fail to incorporate the above three experiences in pre-service teacher education. She suggested that the study indicated that more actual use of software be provided during classes and through assignments. Those teachers who said that they did not feel prepared felt observation of faculty modeling in the use of computer technology, especially software in methods classes, would have increased their confidence in using and integrating computer courseware in the classroom because they could actually observe the "how to" as well as the "hands on" approach.

In 1993, Cardinale presented a study in which she investigated the experience of pre-service teachers with computers. Questionnaires were randomly distributed to 255 undergraduate education majors enrolled in a media and technology course. Following the collection of data from the questionnaire, the subjects were randomly interviewed. The findings outlined in both the questionnaire and the interviews established that both age and gender were factors in determining if a pre-service teacher had experience using computer technology prior to entering the media and technology course. Overall the study revealed that only 25% of the subjects sampled had used computer technology.

Conclusions that can be illustrated by these two studies indicated that teacher preparation programs must provide instruction for the general use of computers and also for specialized applications of relevant technologies which can be integrated into the classroom in a comfortable and "user friendly" environment for both the teacher and the students.

Summary

The literature has illustrated that most pre-service teachers feel they are inadequately prepared in varying degrees to meet the challenge of the "electronic classroom." Several studies have been outlined indicating two basic approaches that researchers and professionals in the field of educational technology feel should be the core of pre-service teacher education. The first, a focus on functional computer literacy, or the "hands on" mechanical operation and second, the integration of a systematic design by faculty in methods courses to model the "how to" which could then be applied to practicums and student teaching.

At the University of South Alabama, Baylor and Daughenbaugh (1989) have determined that it is "merger time" and have outlined cost effective methods to incorporate traditional media, computer and emerging technologies into educational courses. This approach, they felt, would take educational technology programs into the 21st century by preparing teachers to use traditional media in creative new ways while incorporating new and emerging technologies in the classroom via the curriculum.

METHODOLOGY

Subjects

The study encompassed the First Congressional District of Georgia which is located in the southeastern coastal area of the state from the border of South Carolina to Florida and comprises the primary service area for Georgia Southern University. Principals and media specialists working in K-12 positions in the public schools were surveyed. A population of 166 randomly selected subjects (83 principals and 83 media specialists)were stratified by grade level (elementary K-5, middle 6-8, and high 9-12) and school system size (small: under 6,000 students; medium: 6,000-12,000 students; and large: over 12,000 students). Principals and media specialists were not selected from the same building.

Research Design

Descriptive research was the design used for the study. A questionnaire was revised from one that was distributed to graduate student practitioners enrolled in Educational Technology and Educational Leadership courses at Georgia Southern University during the Fall Quarter 1993 as a pilot study. The design was selected to determine the skills that principals and media specialists felt teachers should be able to demonstrate as a condition of their initial employment.

Instrumentation

The survey questionnaire (see Appendix A) was used to to determine the extent to which principals and media specialists agreed upon specific skills which a beginning teacher should be required to demonstrate prior to employment in a public school. The survey contained 19 Likert scale questions

and one open-ended question. Subjects were asked to complete a four point Likert scale to indicate whether they strongly agreed, agreed, disagreed or strongly disagreed with each of the 19 stated questions. The open-ended question asked the subjects to comment from their personal observation regarding media and technology skills they felt should be included when preparing pre-service teachers for future employment in the public schools.

Experts in the field of Educational Technology reviewed the questionnaire and provided feedback on the content validity. Revisions in the questionnaire were made by the researcher as a result of comments and suggestions from the pilot study.

Procedure

A cover letter accompanying the questionnaire explained the purpose of the research and the directions for completing it (see Appendix B and C). The subjects were assured that their responses would be confidential. The researcher tracked the responses with a number code to designate school system size and a color code to indicate principals and media specialists by grade level. The school system size and grade level was analyzed by the researcher to determine how different populations regarded media and technology skills when employing beginning teachers.

The questionnaire, cover letter, and self-addressed stamped envelope were mailed on October 1, 1994. The subjects were asked to respond by October 15, 1994.

RESULTS

Introduction

Questionnaires were sent to 166 subjects employed in the First Congressional District of Georgia. Responses were received from 108 subjects (55 principals and 53 media specialists).

Data received from the questionnaire were analyzed to determine how principals and media specialists compared on each of 19 questions regarding specific media and technology knowledge and skills. A chi-square analysis was used to determine if there were any significant relationships between type of respondent (principals or media specialists) and opinions regarding what media and technology skills beginning teachers should be required to demonstrate.

Comparison of Total Responses

Percentages by category of response and chi-square values are presented in Table 1. Because of the small number of responses, the strongly disagree column was removed from the analysis. Six significant relationships were found between type of respondents (principals or media specialists) and opinions regarding specific media and technology skills.

Ninety-nine percent of the media specialists strongly agreed or agreed that beginning teachers should be able to demonstrate skills in operating a sound filmstrip projector while only 77% of the principals strongly agreed or agreed that this skill was important. Analysis revealed a significant relationship between the type of respondent (principals or media specialists) and opinions regarding use of the sound filmstrip projector (X^2=10.865, p=.004).

Responses revealed 77% of the principals strongly agreed or agreed while 94% of the media specialists strongly agreed or agreed that beginning

Table 1

Comparison of Questionnaire Responses (Principals and Media Specialists)

Question	Principals			Media Specialists			X^2
	SA %	A %	D %	SA %	A %	D %	
1. Overhead Projector	60	31	9	72	28	0	5.442
2. Slide Projector	38	40	23	47	40	13	1.871
3. Sound Filmstrip Projector	44	33	23	57	42	2	10.865**
4. VCR/Monitor	67	24	9	79	21	0	5.448
5. Camcorder	39	39	22	38	55	8	5.296
6. Apple Computer	33	39	28	30	55	15	3.473
7. Macintosh Computer	28	46	27	38	46	22	1.780
8. IBM Computer	42	38	20	48	46	6	4.774
9. Word Processing	44	33	24	49	45	6	7.153*
10. Spreadsheet	18	47	35	16	55	29	2.731
11. Database	16	53	31	26	51	23	1.984
12. Graphics	18	49	33	29	50	21	2.626
13. CD-ROM	29	47	24	51	49	0	15.782**
14. Videodisc	17	58	25	31	57	12	4.569
15. On-line	31	43	26	42	42	15	2.263
16. Instructional activities	35	40	26	43	51	6	7.975*
17. Bulletin Board	16	44	40	25	57	18	6.509*
18. Overhead Transparency	37	35	28	47	51	2	14.004**
19. Slides	12	44	44	10	57	33	1.750

*p≤.05, **p≤.01 Principals N=55 Media Specialists N=53
SA=Strongly Agree, A=Agree, D=Disagree
Percentages may not always equal 100 due to rounding error.

teachers should demonstrate knowledge and skill in operating word processing software. The chi-square analysis indicated that there was a significant relationship between type of respondent (principals or media specialists) and opinions regarding knowledge of word processing software (X^2=7.153, p=.028).

Responses regarding the operation of CD-ROM hardware, revealed a significant relationship between the respondents (principals or media specialists) and opinions (X^2=15.782, p=<.001). Only 76% of the principals felt that this skill should be demonstrated while 100% of the media specialists indicated that they strongly agreed or agreed that the operation of CD-ROM hardware was an important skill.

Questions relating to the demonstration of skills required in developing instructional activities and developing bulletin boards, dealt with using computer technology to produce educational materials. Significant relationships resulted between respondents (principals or media specialists) and opinions regarding using technology to produce instructional activities (X^2=7.975, p=.019) and using technology to produce bulletin boards (X^2 =6.509, p=.039). Seventy-five percent of the principals strongly agreed or agreed that beginning teachers should demonstrate skills in using technology to produce instructional activities. In contrast, 94% of the media specialists strongly agreed or agreed that teachers should demonstrate these skills. Sixty percent of the principals indicated that demonstrating skill in the use of media and technology to produce bulletin boards was important, while 82% of the media specialists strongly agreed or agreed.

The production of overhead transparencies using technology revealed a significant relationship between the type of respondent (principals or media specialists) and opinion (X^2=14.004, p=.001). Seventy-two percent of the principals either strongly agreed or agreed that this knowledge should be demonstrated while 98% of the media specialists strongly agreed or agreed .

Based on the significant differences discussed above it appears that principals do not feel as strongly as media specialists that beginning teacher

should be able to demonstrate mechanical and operational skills in the more traditional forms of media and technology. However, both groups agreed that beginning teachers need to be able to demonstrate skills in other areas such as computer operation, computer software and video technology.

Comparison of Responses by School Size

The responses of principals to the 19 questions were analyzed by both school size (small, medium and large) and school type (elementary, middle and high) using chi-square analysis. Operation of VCR/monitor, using technology to develop bulletin boards, and using technology to produce overhead transparencies all resulted in significant relationships between the size of school system and opinions. Eighty-three percent of the principals working in small school systems indicated they strongly agreed or agreed, while 95% of the principals in medium size and 100% of principals in the large system strongly agreed or agreed that skill in the operation of a VCR/Monitor should be demonstrated (X^2=10.159, p=.038).

Thirty-nine percent of the principals in small school systems indicated that they strongly agreed or agreed that using technology to produce bulletin boards should be demonstrated. Seventy-two percent of principals employed in middle size systems and 82% of principals in the large system strongly agreed or agreed that using technology skills to produce bulletin boards should be demonstrated. This difference in proportion of responses was significant (X^2=11.855, p=.018).

Fifty-six percent of the principals in small school systems, 77% in middle size systems and 100% in the large system strongly agreed or agreed that technology skills should be demonstrated in making overhead transparencies

producing a significant relationship (X^2=9.822, p=.044) between necessity of the skill and school system size.

Forty-six percent of the principals in small school systems, 55% of the principals in medium size and 80% of principals in the large system strongly agreed or agreed the technology skills should be demonstrated in producing slides which resulted in a significant relationship (X^2=10.799, p=.029).

A chi-square analysis was also completed on the responses of media specialists by school system size. One hundred percent of the media specialists in small school systems, 95% of those in middle size systems and 70% employed in the large system responded that they either strongly agreed or agreed that demonstration of the ability to operate a camcorder was important resulting in a significant relationship (X^2 =10.566, p=.032) between necessity of the skill and school system size.

The responses regarding the demonstration of skill in operating an Apple computer resulted in a significant relationship (X^2= 9.991, p=.041) between the necessity of the skill and school system size. Eighty-seven percent of media specialists employed in small school systems, 100% of those in middle size systems and 58% in the large system indicated the skill in operating an Apple computer important.

Eighty-four percent of the media specialists in small school systems, 95% in middle size school systems and 50% of those employed in the large system responded that skill in using computer graphic programs should be demonstrated resulting in a significant relationship (X^2=11.791, p=.019) between the necessity of the skill and school system size.

Comparison of Responses by School System Type

Principals were then compared by school type (elementary, middle and high school) using a chi-square analysis. No significant relationships were found in the responses by the type of school on the 19 questions.

Media specialists' responses were also compared by school type (elementary, middle and high) using a chi-square analysis. No significant relationships resulted between the school type and responses.

Comparison of Responses to the Open-ended Question

The open-ended question asked the respondents, based on their professional observation, where the emphasis should be placed in media and technology courses for pre-service teachers. The accumulated responses (see Appendix D) indicated that both principals and media specialists felt that knowledge of basic computer operation was essential. Elementary principals and media specialists indicated a strong preference for word processing skills, while middle and high school principals and media specialists felt that database and spreadsheet applications were as important as word processing.

Respondents indicated that they felt beginning teachers should possess the ability to evaluate software, integrate it into the curriculum appropriately, and plan instructional activities based on the software programs. Middle and high school principals and media specialists further cited on-line searching and familiarity with E-mail and networking as an important skill.

All of the subjects recognized the need for pre-service teachers to appropriately demonstrate the procedures for operating and using video , CD-ROM and videodisc equipment. However, a stronger emphasis was placed on these technologies at the elementary school level.

The principals who answered the open-ended questions indicated individually they felt that using technology skills to produce instructional materials were important. However, this opinion was not substantiated by responses from the overall group on the specific questions pertaining to the use of technology skills in the production of instructional materials and activities.

SUMMARY AND CONCLUSIONS

Introduction

The purpose of this study was to investigate how school principals and media specialists perceive the preparation of pre-service teachers regarding media and technology and what specific skills they feel should be required when employing beginning teachers. The study encompassed the First Congressional District of Georgia which is located in the southeastern coastal area of the state from the border of South Carolina to Florida and comprises the primary service area for Georgia Southern University. One hundred sixty-six subjects (83 principals and 83 media specialists) working in K-12 positions in the public schools were surveyed.

Based on a chi-square analysis of the responses to the questionnaire both principals and media specialists felt that beginning teachers in the public schools should be able to demonstrate skills in media and technology. Both groups seemed to agree that emphasis should be place on computer literacy, and the ability to operate and use computer software programs in the classroom. These responses reflect Criswell's (1989) statement regarding the importance of a focus on comprehensive training in the fundamentals of computer operation.

Responses by principals employed in small school systems by in large seemed to indicate that less emphasis be placed on beginning teachers' demonstration of production skills using technology. This may be due to the fact that multiple pieces of equipment are not as readily available because of funding or facility situations to support use by teachers within a viable time frame. A further consideration by the principals might be the fact that in a small school system the objective is to hire beginning teachers with strong

backgrounds in specific curriculum areas and therefore, the mastery of technology skills is not the main prerequisite of employment.

When the responses of media specialists were analyzed, it appeared that the type of technology resulted in the most significant relationship between school sizes. Media specialists in small school systems felt that the operation of a camcorder was more important than those in middle size systems or the large system. Again, this may be due to funding. Smaller systems may be required to locally produce video tapes for classroom use because of budget constraints. The middle size systems and the large system may budget funds to provide for professionally produced materials.

Additionally, responses to the open-ended question indicated, that both principals and media specialists felt the ability to select, use and integrate appropriate instructional software in the curriculum to be an important skill for beginning teachers to demonstrate. In a two part model outlined by Oke (1992), the importance of the selection and evaluation of software programs by pre-service teachers was reiterated.

Summary

It appears, based on the responses from both principals and media specialists, that colleges of education need to focus on the integration of computer applications within the teacher education program. All of the respondents agreed that it is important that beginning teachers be able to demonstrate skill in using software programs in the classroom. In order to accomplish this requirement, Kettinger (1991) indicated that software reviews should be required for specific courses in math, science, social studies and reading to allow pre-service teachers the experience of using the programs in specific areas of application with the curriculum. This would probably be the

most expeditious approach to exposing pre-service teachers to a number of different application programs.

Implications for Educators

Perhaps as new technologies (e.g. CD-ROM, videodisc, digital cameras, etc.) the emphasis should be shifted to them and away from the operation and use of traditional equipment (e.g. filmstrip projectors). It is possible that the principals have approached the use of media and technology skills from a conceptual perspective while the media specialists felt that a "hands on" operational approach of the current technology is required. Principals also may not be as informed regarding the new and emerging technologies as media specialists since technology is not their area of expertise. As Baylor and Daughenbaugh (1989) indicated, it is "merger time". The approach to media and technology should be integrated. Instruction in traditional media, computers and emerging technologies should be structured so that these skills are incorporated across the teacher education curriculum.

Recommendations for Further Study

Additional research should be conducted in Georgia to determine if the perceptions apparent in the southeastern area of the state are generalizable to other areas. While a number of small and medium size school systems were included in the survey, only one large district fell within the First Congressional District boundary. Several larger systems in urban areas of the state should be studied to determine how principals and media specialists respond to the skills beginning teachers should be able to demonstrate when being employed in the public schools.

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Appendix A

QUESTIONNAIRE

Please circle the answer that you feel most completely applies to your educational setting.

SA - Strongly agree A - Agree D - Disagree SD - Strongly disagree

As a prerequisite of employment beginning teachers must be able to demonstrate knowledge and skill

1. in operating an overhead projector.	SA	A	D	SD
2. in operating a slide projector.	SA	A	D	SD
3. in operating a sound filmstrip projector	SA	A	D	SD
4. in operating a VCR player and monitor.	SA	A	D	SD
5. in operating a camcorder.	SA	A	D	SD
6. in operating Apple computers.	SA	A	D	SD
7. in operating Macintosh computers.	SA	A	D	SD
8. in operating IBM computers.	SA	A	D	SD
9. in operating word processing software.	SA	A	D	SD
10. in operating spreadsheet software.	SA	A	D	SD
11. in operating database software.	SA	A	D	SD
12. in operating graphics software.	SA	A	D	SD
13. in operating CD ROM hardware.	SA	A	D	SD
14. in operating videodisc hardware.	SA	A	D	SD
15. in searching online resources.	SA	A	D	SD
16. in developing instructional activities using computer software programs.	SA	A	D	SD
17. in utilizing technology to develop bulletin boards	SA	A	D	SD

18. in utilizing technology to produce overhead transparencies. SA A D SD

19. in utilizing technology to produce slides. SA A D SD

20. Based on my professional observation I feel that emphasis should be placed on the following skills when preparing pre-service teacher in media and technology courses:

21. Additional comments:

Appendix B

Dear

As an administrator employed in southeast Georgia, you have been selected to participate in a research study. The study will attempt to determine through the use of a questionnaire the technology skills administrators feel should be demonstrated by beginning teachers employed by the public schools.

An anonymous questionnaire has been designed to allow you to easily provide responses. A place for your personal comments has also been provided. Only composite data, not individual responses, will be reported.

Please take a few minutes from your busy schedule to complete the questionnaire and return it in the enclosed self addressed stamped envelope by October 15, 1994.

Thank you for your cooperation.

Sincerely yours,

Jacqueline Bedell

Appendix C

Dear

As a Media Specialist employed in southeast Georgia, you have been selected to participate in a research study. The study will attempt to determine through the use of a questionnaire the technology skills Media Specialists feel should be demonstrated by beginning teachers employed by the public schools.

An anonymous questionnaire has been designed to allow you to easily provide responses. A place for your personal comments has also been provided. Only composite data, not individual responses, will be reported.

Please take a few minutes from your busy schedule to complete the questionnaire and return it in the enclosed self addressed stamped envelope by October 15, 1994.

Thank you for your cooperation.

Sincerely yours,

Jacqueline Bedell

Appendix D

TABULATION OF RESPONSES TO THE OPEN-ENDED QUESTION

	Principals			Media Specialists		
	Elem.	Middle	High	Elem.	Middle	High
Basic Comp. Operation	19	4	5	17	3	4
Production Skills	4	1				
Equip. Maint,	10	1	3	4	1	1
Video, CD-ROM	11	3	4	4	2	5
Videodisc, Multi-media						
Comm., On-line	3	1	1		3	1
E-Mail, Modem						
Satellite,		2	1			1
Distance Learning						
Software,	7*	3*	3	5	3	1
Applications						
Software	15	2	5	11		3
Evaluation						
Curr.						
Networking	1	1	1			1
Copyright	2					
Misc. Circ.	3			1		
Book talk						
Dewey						