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ABSTRACT

Three surveys were used to ascertain the attitudes, beliefs, and preparation of in-service teachers, pre-service teachers, and student teachers regarding the uses and integration of technology into the classroom and curriculum in elementary, middle, and high schools in four school districts in San Antonio (Texas). Results of these surveys were compared with data gathered over the past 6 years as reported by pre-service teachers in the teacher certification program at St. Mary's University (Texas) and with research regarding national trends. Preliminary results show that very little has actually changed in the attitudes of teachers toward the uses of technology in the classroom. The computer is still viewed as the curriculum rather than as a tool for teaching the curriculum to students. There is still resistance and fear in the integration of anything new into the classroom and teachers do not recognize the usefulness or necessity of using technology for teaching and learning. The questionnaires are appended. (Author/AEF)

Historical and Current Attitudes Toward and Uses of Educational Technology

A WORK IN PROGRESS

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Abstract: Three surveys are being used to ascertain the attitudes, beliefs, and preparation of in-service teachers, pre-service teachers, and student teachers regarding the uses and integration of technology into the classroom and curriculum in Elementary, Middle and High Schools in four school districts in San Antonio. The results will be compared with data gathered over the past six years as reported by the pre-service teachers in the teacher certification program at St. Mary's University and with research regarding national trends. The questions to be answered is "Are teachers better prepared to use and really implementing and integrating the uses of technology in everyday classrooms?"

1. Background

In 1992, the San Antonio, Texas consortium of institutions of higher education, local school districts, and businesses known as CEDE, Center for Educational Development and Excellence, was formed to meet the State initiative to infuse technology into teacher pre-service education and in-service training. The Texas Education Agency funded the Center with $1.9 million the first year, with the funds to be used to provide institutions of higher education and local partner schools the technological equipment and connections to begin the project. Subsequent years were funded at decreasing amounts with the intent of having the institutions of higher education and school districts institutionalize continued funding. This further funding was for training of teachers and staff of the local schools and faculty and teacher certification students in institutions of higher education.

The Education Department of St. Mary's University received $284,096 the first year, set up a computer lab/classroom, equipped all professors, and assigned the teaching of technological components to various courses in the degree plan for teacher certification students. Partnerships were formed between the University and three near-by schools - one elementary, one middle school, and one high school - which form a feeder system so that students could be followed for longitudinal information regarding changes in integration and use of technology and attitudes of teachers and students regarding such. Workshops were designed to train in-service teachers. Stipends were paid to those who participated and showed willingness to attempt integration of technology into their classroom curriculum and practices. Training for St. Mary's faculty was held and new professional growth plans were developed to reflect the University's commitment to the project. Courses were redesigned with emphasis on the use of many types of technology to fulfill syllabi requirements.

A national mandate by President Clinton in 1996 stated that every young person must be technologically literate by the 21st century. To meet this challenge, Texas has adopted standards to assure the development of technologically literate individuals who possess the knowledge and the skills to solve problems, make decisions, and be lifelong learners in a society increasingly dependent on rapidly changing technologies. The Texas Essential Knowledge and Skills (TEKS) curriculum components were adopted by the State Board of Education in 1997. They consist of basic understandings, knowledge and skills, as well as performance objectives required of K-12 students and, for the first time, have large sections devoted to technology of all types for all grade levels. Teachers are expected to integrate

the TEKS into the curriculum during the 1998-1999 school year and will be held accountable for student performance on the Texas Assessment of Academic Skills (TAAS), the standardized test used to evaluate student achievement and qualify students for graduation from high school. School districts, schools, and personnel are reviewing the current practices and developing methods to integrate and assess instruction in all areas of technology included in the K-12th grades TEKS with effectiveness of the programs primarily being measured by evaluation of student outcomes.

To meet the demands of both the Presidential mandate and the Texas Education Agency, schools must have teachers who understand and are comfortable with the uses and integration of technology in their curriculum. Finding these teachers can be very difficult, if not impossible in some areas. Trotter [Trotter 1997] cites a study done by Becker which found that only 5% of teachers using computers were "exemplary" in their use. These teachers were able to use computers as a tool for teaching. However, observation has found that the majority of teachers still instruct in the traditional manner even when computers are supplied to the classroom. Research reported in Blueprints [Blueprints 1998] shows that pre-service teachers and in-service teachers must be trained in a manner that is sustained and supported long enough for effectiveness and comfort to develop. Ideally, this training should happen before they become full time teachers if technology integration and use is to become a part of the classroom on a consistent basis. Pre-service teachers often are not exposed to the uses of any technology in the school classrooms as they observe and do field experience. Therefore, they do not understand the emphasis on and importance of getting trained before they enter the teaching work force. "We teach as we were taught, therefore, teachers rarely see examples of technological integration into the curriculum after which they can model their own teaching" [Davenport, 1995]. University professors have not been trained to model the uses and integration of technology in their teaching style, so it is difficult for students to imagine the uses of such things as hypercard, multimedia presentations, interactive video, and so on. Beaver [Beaver 1990] stated that there is a void in the training of teacher education faculty and this void is passed on to their undergraduate students.

Funding for technology is difficult to find for private institutions of higher education and economically challenged school districts, and technology is changing at an increasingly rapid pace so that upgrading and/or keeping up has become almost impossible on a district-wide or even school-wide basis. Labs are often obsolete before they are even finished and teacher training lags behind for keeping up with ever-changing applications. Schools lack connection to the Internet and the information highway is inaccessible to many, if not most, students. Without the equipment and software that are appropriate for use in the classrooms, teachers cannot use and integrate technology into their daily lessons [Davenport, 1995].

2. The Study

Three surveys were developed to ascertain the attitudes, beliefs, and preparation of in-service teachers, pre-service teachers, and student teachers. The sample population surveyed included: 1) all teacher certification students, elementary and secondary, enrolled in education courses. These were University juniors, seniors and post-baccalaureate students; 2) all student teachers enrolled in either Elementary or Secondary Classroom Management; 3) in-service elementary and secondary teachers in four school districts in San Antonio.

Results of these surveys were compared with data gathered over the past six years regarding the uses, integration, training and attitudes regarding use of technology as reported by the pre-service teachers in the teacher certification program at St. Mary's University. Research regarding national trends was also compared to the results of the St. Mary's and San Antonio data.

Quantitative data such as group means were based upon a four point Likert scale to measure responses between groups. A four-point scale was chosen to force respondents to either agree or disagree with each survey statement. The mean and standard deviation for each statement was used to determine if significant differences existed between the groups. An analysis of covariance was calculated.

3. Results

Preliminary results show that very little has actually changed in the attitudes of teachers toward the uses of technology in the classroom. The computer is still viewed as the curriculum rather than as a tool for teaching the curriculum to students. There is still resistance and fear in the integration of anything new into the classroom and teachers do not recognize the usefulness or necessity of using technology for teaching and learning. Final results will be available by conference presentation date.

Survey Documents used for this research appear in Appendix A.

4. REFERENCES

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Appendix A

TEACHER SURVEY

Use the following four point Likert scale to state your perceptions of technology.

4 - Strongly Agree; 3 - Agree; 2 - Disagree; 1 - Strongly Disagree

I can:

1. Launch programs: start, exit, create, name, and save files

   4 3 2 1

2. Use input devices: mouse, keyboard, disc drive, modem, recorder, and scanner

   4 3 2 1

3. Use design principles: fonts, color, white space, and graphics

   4 3 2 1

4. Delineate and make necessary adjustments regarding compatibility issues: digital files, formats, and cross platform connectivity

   4 3 2 1

5. Teach the proper keyboarding techniques and demonstrate appropriate speed

4 3 2 1

6. Use programs that demonstrate the association among visuals, spoken words, and written words: pictures, graphics, animation, and video

4 3 2 1

7. Teach appropriate electronic search strategies (including keyword and Boolean)

4 3 2 1

8. Create technology assessment tools to monitor progress of projects: checklists, timelines, and rubrics

4 3 2 1

9. Plan, create, and edit a document with a word processor using readable fonts, alignment, page setup, tabs and ruler settings

4 3 2 1

10. Create and edit, spreadsheets using all data types, formulas, functions, and chart information

4 3 2 1

11. Plan, create, and edit database by defining fields, entering data, and designing layouts appropriate for reporting

4 3 2 1

12. Use interactive virtual environments such as virtual reality or simulations

4 3 2 1

13. Use telecommunication tools for publishing such as Internet browsers, video conferencing or distance learning

4 3 2 1

14. Use programs such as:

Desktop publishing

4 3 2 1

Digital graphics and animation

4 3 2 1

Multimedia

4 3 2 1

Video technology

4 3 2 1

Web mastery

4 3 2 1

15. Use other electronic devices:

    Camcorders

    4 3 2 1

    VCR

    4 3 2 1

    Tape recorders/players

    4 3 2 1

    Programmable or remote control toys

    4 3 2 1

    Walkie-talkies/cellular phones

    4 3 2 1

    Telephone and voice messaging

    4 3 2 1

16. Effectively manage files

    4 3 2 1

17. Use word processing to develop, store, retrieve, edit, format and publish error free written products

    4 3 2 1

18. Write effectively using research and retrieval from electronic reference materials and incorporate graphics appropriately to enhance written product

    4 3 2 1

19. Use e-mail

    4 3 2 1

20. Can access, organize, and use information in various formats and from various sources for problem solving, decision making, and persuasive presentations

    4 3 2 1

21. Collect, analyze and report statistical data

    4 3 2 1

22. Enjoy surfing the WEB

    4 3 2 1

23. Use WEB to enhance course content

4 3 2 1

24. Finish work faster when I use a computer

4 3 2 1

25. Learn more from books than from a computer

4 3 2 1

26. Have students learn more from books than from a computer

4 3 2 1

27. Comfortable doing my own trouble shooting

4 3 2 1

28. Spend many hours surfing the WEB

4 3 2 1

29. Spend as little time as possible surfing the WEB

4 3 2 1

30. Feel comfortable asking for help when I need assistance

4 3 2 1

31. Use a computer in my class to make me a better teacher

4 3 2 1

32. Use computers to enhance remedial instruction

4 3 2 1

33. Use computers to reduce many routine duties

4 3 2 1

34. Electronic mail (e-mail) is an effective means of disseminating class information and assignments

4 3 2 1

35. More courses should use e-mail to disseminate class information and assignments

4 3 2 1

36. E-mail provides better access to students

4 3 2 1

37. The use of the WEB activities encourages greater motivation and creativity

4 3 2 1

38. The use of the WEB encourages greater student involvement

4 3 2 1

39. The use of technology helps students to learn more

4 3 2 1

40. Computers are changing the world too rapidly

4 3 2 1

41. Computers in my room would help make me a better teacher.

4 3 2 1

STUDENT TEACHER TECHNOLOGY SURVEY

Circle the correct response:

1. During student teaching did you participate in any computer instruction with your students?

YES NO

2. Did this instruction take place in a:

a. computer lab

YES NO

b. classroom

YES NO

3. During student teaching I observed, or used the following types of technology for instruction:

a. Photocopying/transparency	YES	NO
b. Overhead projector	YES	NO
c. Video camera	YES	NO
d. Videocassette recorder	YES	NO
e. Sound-filmstrip projector	YES	NO
f. Laser disc player	YES	NO
g. Compact disc player	YES	NO
h. Use of software	YES	NO
i. Computer projection	YES	NO
j. Equipment maintenance	YES	NO

k. Auxiliary camera YES NO

l. Multi-media presentation YES NO

4. Were these an integral section of content instruction? YES NO

Use the following four point Likert scale to state your perceptions of technology

4 - Strongly Agree; 3 - Agree; 2 - Disagree; 1 - Strongly Disagree

1. Technology provides a means of using class time effectively to meet the objectives of the course

   4 3 2 1

2. Technology provides a means of using course examples and illustration effectively

   4 3 2 1

3. Technology provides a means of presenting well organized presentations

   4 3 2 1

4. I am comfortable using technology

   4 3 2 1

5. I am comfortable using

   a. Photocopies/transparencies

   4 3 2 1

   b. Overhead projector

   4 3 2 1

   c. Video camera

   4 3 2 1

   d. Video cassette recorder

   4 3 2 1

   e. Sound-filmstrip projector

   4 3 2 1

   f. Laser disc player

   4 3 2 1

   g. Compact disc player

   4 3 2 1

   h. Software

4 3 2 1

i. Computer projection

4 3 2 1

j. Computer maintenance

4 3 2 1

k. Auxiliary camera

4 3 2 1

Multi-media presentation

4 3 2 1

6. Students are comfortable using technology

4 3 2 1

7. I am comfortable interpreting computer data

4 3 2 1

8. Students are comfortable interpreting computer data

4 3 2 1

9. I find working on a computer is boring

4 3 2 1

10. Students find working on a computer is boring

4 3 2 1

11. Working on a computer makes me feel frustrated

4 3 2 1

12. Working on a computer encourages my feelings of aggression and hostility toward the machine

4 3 2 1

13. Implementing computer technology in a classroom is a waste of time

4 3 2 1

14. Working on a computer develops feelings of isolation and lack of personal control

4 3 2 1

15. I find technology implementation stimulating

4 3 2 1

16. Currently and in the future technology will play an important role in everyone's life

4 3 2 1

17. E-mail was used to share information and assignments in the class

4 3 2 1

18. E-mail enhances instruction

4 3 2 1

19. E-mail provides better access to students in a class

4 3 2 1

20. E-mail provides better access to the teacher in a class

4 3 2 1

21. E-mail use increases student motivation

4 3 2 1

22. E-mail increases student interest in expanding their knowledge

4 3 2 1

23. The use of E-mail encourages student involvement in learning

4 3 2 1

24. The use of E-mail provides better learning experiences

4 3 2 1

25. Enjoy surfing the WEB

4 3 2 1

26. Use WEB to enhance course content

4 3 2 1

27. Finish work faster when I use a computer

4 3 2 1

28. Learn more from books than from a computer

4 3 2 1

29. Student learn more from books than from a computer

4 3 2 1

30. Comfortable doing my own trouble shooting

4 3 2 1

31. Spend many hours surfing the WEB

4 3 2 1

32. Spend as little time as possible surfing the WEB

4 3 2 1

33. Use a computer in my class to make me a better teacher

4 3 2 1

34. Use computers to enhance remedial instruction

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35. Use computers to reduce many routine duties

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36. Electronic mail (e-mail) is an effective means of disseminating class information and assignments

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37. More courses should use E-mail to disseminate class information and assignments

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38. E-mail provides better access to students

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39. The use of WEB activities encourages greater motivation and creativity

4 3 2 1

40. The use of the WEB encourages greater student involvement

4 3 2 1

41. The use of technology helps students learn more

4 3 2 1

42. Computers are changing the world too rapidly

4 3 2 1

43. Computers in my room would help make me a better teacher

4 3 2 1

TECHNOLOGY SURVEY FOR ALL EDUCATION STUDENTS

Use the following four point Likert scale to choose your perception of your current competency:

4 - Strongly Agree; 3 - Agree; 2 - Disagree; 1 - Strongly Disagree

1. Competent in using:

a. Photocopying/transparency

4 3 2 1

b. Overhead projector

4 3 2 1

c. Video camera

4 3 2 1

d. Video cassette recorder

4 3 2 1

e. Sound-filmstrip projector (Dukane)

4 3 2 1

f. Laser disc player

4 3 2 1

g. Compact disc player

4 3 2 1

h. Use of software

4 3 2 1

i. Computer projection

4 3 2 1

j. Equipment maintenance

4 3 2 1

k. Auxiliary camera

4 3 2 1

l. Multi-media

4 3 2 1

2. Working with technology makes me uncomfortable

4 3 2 1

3. Interpreting computer data is difficult

4 3 2 1

4. Computer work is boring

4 3 2 1

5. Technology work is frustrating

4 3 2 1

6. Computer work is frustrating

4 3 2 1

7. Working with technology encourages feelings of aggression and hostility toward the machines

4 3 2 1

8. Working with computers encourages feelings of aggression and hostility toward the machines

4 3 2 1

9. Working with technology encourages feelings of isolation and lack of personal control

4 3 2 1

10. Working with computers encourages feelings of isolation and lack of personal control

4 3 2 1

11. Working with technology is stimulating

4 3 2 1

12. Working with computers is stimulating

4 3 2 1

13. Work with computers can be embedded within course content

4 3 2 1

14. Work with technology can be embedded within course content

4 3 2 1

15. Work with computers can enhance course content delivery

4 3 2 1

16. Work with technology can enhance course content delivery

4 3 2 1

17. Technology implementation will play an important role in my career choice

4 3 2 1

18. Computer implementation will play an important role in my career choice

4 3 2 1

19. Gaining competency in the use of technology in education is difficult

4 3 2 1

20. Gaining competency in the use of computers in education is difficult

4 3 2 1

21. I enjoy surfing the WEB

4 3 2 1

22. I use the WEB to enhance course content

4 3 2 1

23. Reread 20, 21 and 22 and in a short statement tell why you answered as you did.

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