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A Study of Social Science Technology Indicators for Social Science Teachers

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Abstract

It is to be expected that a technology study that is inconclusive of the year 1998 through the year 2009 will exhibit some degree of variation in both technology and technology skills. The current National Educational Technological Standards for students and for teachers have been revised since the original longitudinal study was developed and implemented.

As a National Council for the Accreditation of Teacher Education Board of Examiners member and The National Council for the Accreditation of Teacher Education Program Review Auditor, the author is extremely aware of the role of current educational technology in the unit assessment as well as in specific candidate assessment for the preparing Pk-12 classroom teachers.

Do teaching candidates have the skills to plan and teach technology rich lesson plans and resource units? How might the education courses enhance the candidates' skills in planning, teaching, and impacting student learning with technology rich lesson plans and resource units?

What is the evidence of a longitudinal study that the educational methods courses enhance the candidates' skills in planning, teaching, and impacting student learning with technology rich lesson plans and resource units?

Introduction

The Conceptual Framework of the author's university specifies that all education candidates shall develop technology proficiency prior to internship in the setting. The College of Education and Human Services states the following:

Technology is reaching into our lives more everyday. The fields of education and human services are no exceptions to that reality. The College of Education and Human Services offers a wide variety of services to support technology and to provide both students and faculty with the tools they need to take advantage of technological explosions in your fields of study. Extensive use of new technologies is apparent throughout the College - from state of the art electronic classrooms to video conferencing facilities that make teaching and learning more effective (http://www.cehs.wright.edu/technology/index.php.)

The college's conceptual framework clearly identifies Technology as one of six strands:

Technology (Strand 4)

Teacher candidates and candidates for professional roles apply appropriate technology to add value to the learning process.

The technology strand represents the Unit's commitment to assuring professional educators/ leaders/counselors and candidates are knowledgeable and able to make

thoughtful, appropriate applications of technology to add value to the learning process, to determine the essential conditions for effective use, and to understand its powerful role in shaping individual lives and society.

Technology interweaves with the other five strands in the Conceptual Framework to develop the art and science of teaching/leadership/counseling. Technology is an important component in making appropriate content and pedagogy decisions related to appropriate assignments and activities, research requirements, and information technology literacy requirements. Technology can support the application of emotional intelligence to enhance student learning and client outcomes for diverse populations through innovative options for instruction and assessment. Technology can also support professionalism by facilitating productivity, planning, and administrative functions (http://www.cehs.wright.edu/main/conceptual-framework.php.)

Essential Technology Skills

The National Council for the Accreditation of Teacher Education (NCATE, 1994) and the International Society of Technology in Education (ISTE, 1996) have recommended fundamental concepts and skills needed by all prospective teachers for applying technology in educational settings. The original ISTE 1996 indicators have been updated and are currently available at NETS for Teachers. The longitudinal study is based on the International Society of Technology in Education that was developed in 1996.

The following are ISTE guidelines related to technology in professional education programs:

Professional studies culminating in the educational computing and technology literacy endorsement prepare candidates to use computers and related technologies in educational settings. All candidates seeking initial certification or endorsements in teacher preparation programs should have opportunities to meet the educational technology foundation standards.

Professional studies in educational computing and technology provide concepts and skills that prepare teachers to teach computer/technology applications and use technology to support other content areas.

Professional preparation in educational computing and technology literacy prepares candidates to integrate teaching methodologies with knowledge about use of technology to support teaching and learning.

The National Council for the Social Studies *Standards for Social Studies Teachers* (2000) stated that all social studies teachers at all levels should provide developmentally appropriate experiences as they guide learners in the study of technology. The prospective teacher should (a) address social, ethical, and human issues, (b) use productivity tools, (c) use telecommunications and access information, and (d) use technology to research, problem solve, and develop products.

The National Council for the Social Studies *Social Studies Curriculum Guidelines* (1971) demonstrated foresight by including an appendix of "Essential Skills for Social Studies: Acquiring Information," when it spoke to the need for technical skills (148.)

Specifically with respect to social studies, Lee (2008) has provided a set of guidelines for effectively integrating technological pedagogical content knowledge into a social studies context. These guidelines include the following:

- Locating and adapting digital resources for use in the classroom.
- Facilitating students' work in nonlinear environments.
- Working to develop critical media literacy skills among students.

- Providing students with opportunities to utilize the presentational capabilities of the Web to motivate and encourage students.
- Using the Internet to extend collaboration and communication among students.
- Extending and promoting active and authentic forms of human interaction and technology enabled social networks. (Lee, 2008, p. 130)

Problem Statement

The author has garnered several state and federal technology grants. The purposes of these grants were to "infuse" technology into the secondary social studies methods course for future social science educators. The conceptual issue would be "how might the secondary social studies methods course 'infuse' various technological skills that are necessary for teaching in settings that provided a rich technology environments?"

The study focused on necessary technological skills for emerging social studies teachers.

Given two social studies methods courses and a social studies student teaching seminar, would the social studies candidates acquire the necessary technological skills to function adequately in the classroom?

Participants

The population consisted of 284 secondary social studies candidates during the years 1998 – 2009. During this 1998 – 2009 study, all candidates were given pre- and post technologies inventories. None of the secondary candidates had taken a formal university technology course. The study proposed to measure pre and post technology skills. The social studies methods courses exceeded NCATE/NCSS requirements because the same professor had the same candidates for two social studies methods courses as well as a concurrent student teaching seminar.

Research Design

On the first day of the first methods class, all candidates were given the technology inventory. On the last day of the second social studies methods course, the final inventory was administered to the candidates.

Survey: Basic Technology Indicators

Adapted from the 1996 http://profiler.scrtec.org, National Educational Standards for Teachers – International Society for Technology in Education. However, the original ISTE 1996 indicators have been updated and are currently available at NETS for Teachers.

Please complete the following survey by selecting one of the choices (indicating your best estimate of your skill or knowledge level) about each of the technology or social studies related indicators.

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Survey Key:
A = Strongly Agree
B = Somewhat Agree
C = Neutral
D = Somewhat Disagree
E = Strongly Disagree
Part One: Technology Indicators

(http://profiler.scrtec.org)

As social science education candidate, I currently have the following knowledge, skill or ability:

1. Solve common printing problems

2. Use advanced features of a word processor (tables, headers and footers, macros, table of contents, columns, etc.)
3. Copy a graphic from a Web site
4. Create and use bookmarks/favorites
5. Cut, copy, and paste text both within an application and between multiple open applications
6. Merge information from a database into a word processing document (mail merge)
7. Download and decompress files
8. Subscribe and unsubscribe from a mailing list (listserv)
9. Scan a document
10. Create a Web page
11. Create and maintain backups
12. Open a file from a floppy disk or a local or network hard drive; save a file to a floppy disk or to a specific location on a local or network hard drive
13. Configure computer to connect with network
14. Reduce, enlarge, or crop a graphic and convert graphics from one file format to another
15. Format/initialize a disk
16. Setup computer system and connect peripheral devices
17. Record an audio file or digitize a video clip
18. Access a specific Web page (URL) and search the Web using a variety of tools
19. Install application software
20. Create an electronic presentation
21. Manage names and groups in an address book
22. Create, copy, move, rename, and delete folders
23. Send e-mail messages and send/receive attachments
24. Install/reinstall system software and printer drivers
25. Use formulas and/or functions in a spreadsheet
26. Create a graph from spreadsheet data
27. Allocate memory to an application (Mac only)
28. Start up and shut down the computer; open and close an application/program; insert and eject a removable disk (floppy disk, CD-ROM)
29. Create a report (query/find request) in a database and sort the results
30. Correct a locked-up computer

Part Two: Professional Preparation Performance Profile

(National Educational Standards for Teachers – International Society for Technology in Education)

As social science education candidate, I currently have the following knowledge, skill or ability:

31. identify the benefits of technology to maximize student learning and facilitate higher order thinking skills
32. differentiate between appropriate and inappropriate uses of technology for teaching and learning while using electronic resources to design and implement learning activities
33. identify technology resources available in schools and analyze how accessibility to those resources affects planning for instruction

34. identify, select, and use hardware and software technology resources specially designed for use by PK/12 students to meet specific teaching and learning objectives.
35. plan for the management of electronic instructional resources within a lesson design by identifying potential problems and planning for solutions
36. identify specific technology applications and resources that maximize student learning, address learner needs, and affirm diversity
37. design and teach technology-enriched learning activities that connect content standards with student technology standards and meet the diverse needs of students
38. design and peer teach a lesson that meets content area standards and reflects the current best practices in teaching and learning with technology.
39. plan and teach student-centered learning activities and lessons in which students apply technology tools and resources
40. research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information resources to be used by students.
41. discuss technology-based assessment and evaluation strategies
42. examine multiple strategies for evaluating technology-based student products and the processes used to create those products.
43. examine technology tools used to collect, analyze, interpret, represent, and communicate student performance data.
44. integrate technology-based assessment strategies and tools into plans for evaluating specific learning activities.
45. develop a portfolio of technology-based products from course work, including the related assessment tools.
46. identify and engage in technology-based opportunities for professional education and lifelong learning, including the use of distance education
47. apply online and other technology resources to support problem solving and related decision making for maximizing student learning.
48. participate in online professional collaborations with peers and experts
49. use technology productivity tools to complete required professional tasks
50. identify technology-related legal and ethical issues, including copyright, privacy, and security of technology systems, data, and information
51. examine acceptable use policies for the use of technology in schools, including strategies for addressing threats to security of technology systems, data, and information.
52. identify issues related to equitable access to technology in school, community, and home environments.
53. identify safety and health issues related to technology use in schools.
54. identify and use assistive technologies to meet the special physical needs of students.

Findings of the Study

It is to be expected that a technology study that is inconclusive of the year 1998 through the year 2009 will exhibit some degree of variation in both technology and technology skills. Who in 1998 might have predicted that Apple Inc. market cap of $222.6 billion would supersede Microsoft's total stock value of $219.4 billion (Sarno, A10) In 1998 who would have predicted the plethora of electronic and digital devices that exist in 2010? Whether or not the current fads/electronics of 2010 will have educational value will be the consideration for future educational studies. Perhaps one of the greatest advances is the elimination of the "old disks," and the replacement with current storage products.

The finding of the study indicated a greater technological sophistication by candidates (since 2005), but several concerns remained constant. Given the 30 specific indicators in part one of the indicators, 100% of candidates in the longitudinal study indicated little or no knowledge or experience with Part One: Technology Indicators, items 1., 6., 9., 10., 14., 16., 17., 24., 25., 26., 27., and 30. These technology indicators are as follows:

      1. Solve common printing problems

      6. Merge information from a database into a word processing document (mail merge)

      9. Scan a document

      10. Create a Web page

      14. Reduce, enlarge, or crop a graphic and convert graphics from one file format to another

      16. Setup computer system and connect peripheral devices

      17. Record an audio file or digitize a video clip

      24. Install/reinstall system software and printer drivers

      25. Use formulas and/or functions in a spreadsheet

      26. Create a graph from spreadsheet data

      27. Allocate memory to an application (Mac only)

      30. Correct a locked-up computer

That is 100% of the students responded "somewhat disagree or disagree." By the end of the social studies methods courses 100% or the candidates responded "strongly agree" to all of the technological indicators. The two Social Studies Methods courses had "demonstrated impact on student learning."

Given the 30 specific indicators in part one of the indicators, 100% of the candidates in the longitudinal study responded "strongly agree" with Part One: Technology Indicators, items: 2., 3., 4., 5., 7., 8., 11., 12., 13., 15., 18., 19., 20., 21., 22., 23., 28., 29. These technology indicators are as follows:

    2. Use advanced features of a word processor (tables, headers and footers, macros, table of contents, columns, etc.)

    3. Copy a graphic from a Web site

    4. Create and use bookmarks/favorites

    5. Cut, copy, and paste text both within an application and between multiple open applications

    7. Download and decompress files

    8. Subscribe and unsubscribe from a mailing list (listserv)

    11. Create and maintain backups

    12. Open a file from a floppy disk or a local or network hard drive; save a file to a floppy disk or to a specific location on a local or network hard drive

    13. Configure computer to connect with network

    15. Format/initialize a disk

    18. Access a specific Web page (URL) and search the Web using a variety of tools

    19. Install application software

    20. Create an electronic presentation

    21. Manage names and groups in an address book

    22. Create, copy, move, rename, and delete folders

    23. Send e-mail messages and send/receive attachments

28. Start up and shut down the computer; open and close an application/program; insert and eject a removable disk (floppy disk, CD-ROM)

29. Create a report (query/find request) in a database and sort the results

While the two social studies methods courses provided cross platform (PC and MAC) resolution to those indicators that required the greatest consideration, attention was also given to those indicators that the students had indicated mastery.

The two social studies courses integrated specific problem solving and coursework that would involve all 30 technology indicators over two quarters. Rather than teach the courses in a specific computer lab, the courses were taught in a wireless electronic classroom. Students were required to bring laptops to each class, and time was allocated to "cross platform (PC and MAC) resolution" in order that the candidates might exhibit technological skills in any setting regardless of platform.

Given the 24 specific indicators in part two of the survey of the indicators, 100% of the candidates in the longitudinal study indicated little or no knowledge or experience with Part Two: Technology Indicators, items 31-54. These technology indicators are as follows:

31. identify the benefits of technology to maximize student learning and facilitate higher order thinking skills

32. differentiate between appropriate and inappropriate uses of technology for teaching and learning while using electronic resources to design and implement learning activities

33. identify technology resources available in schools and analyze how accessibility to those resources affects planning for instruction

34. identify, select, and use hardware and software technology resources specially designed for use by PK/12 students to meet specific teaching and learning objectives.

35. plan for the management of electronic instructional resources within
a lesson design by identifying potential problems and planning for solutions

36. identify specific technology applications and resources that maximize student learning, address learner needs, and affirm diversity

37. design and teach technology-enriched learning activities that connect content standards with student technology standards and meet the diverse needs of students

38. design and peer teach a lesson that meets content area standards and reflects the current best practices in teaching and learning with technology.

39. plan and teach student-centered learning activities and lessons in which students apply technology tools and resources

40. research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information resources to be used by students.

41. discuss technology-based assessment and evaluation strategies

42. examine multiple strategies for evaluating technology-based student products and the processes used to create those products.

43. examine technology tools used to collect, analyze, interpret, represent, and communicate student performance data.

44. integrate technology-based assessment strategies and tools into plans for evaluating specific learning activities.

45. develop a portfolio of technology-based products from course work, including the related assessment tools.

46. identify and engage in technology-based opportunities for professional education and lifelong learning, including the use of distance education

47. apply online and other technology resources to support problem solving and related decision making for maximizing student learning.

48. participate in online professional collaborations with peers and experts

49. use technology productivity tools to complete required professional tasks

50. identify technology-related legal and ethical issues, including copyright, privacy, and security of technology systems, data, and information

51. examine acceptable use policies for the use of technology in schools, including strategies for addressing threats to security of technology systems, data, and information.

52. identify issues related to equitable access to technology in school, community, and home environments.

53. identify safety and health issues related to technology use in schools.

54. identify and use assistive technologies to meet the special physical needs of students.

The two social studies courses integrated specific problem solving and coursework that would involve all 24 Part Two technology indicators over two quarters. Part two indicators are vital considerations for all practicing social studies teachers. These indicators are not on the same level with the skill based indicators of part one. The Part Two indicators will continue to raise questions throughout the careers of the social studies students.

Given the 24 specific indicators in part two of the survey of the indicators, 100% of the candidates by the end of the two social studies methods courses in the longitudinal study indicated "strongly agree." That is, the candidates recognized that these 24 indicators may continue to be problematic, but the candidates indicated that they were "ready" to function in the classroom with these indicators.

Conclusions

The study indicated that two social studies methods courses could "infuse" current technological skills as well as specific professional dispositions towards technology considerations. The study concluded that a generic technology course was not necessary for the student to learn technological skills and dispositions.

Clearly, the richness of the technology aspect of the methods courses required much more professor preparation planning and time and also involved supplemental lessons taught by technologists. The ongoing demand of NCATE Program Reports, federal and state assessments, curricular redesign, an ongoing university course alignments require course and professor time as well. There is good reason that "NCATE 101" has also been infused into the social studies method courses.

Technology skills and instruction in today greatly exceed the expectations of those in the past decade. The study has concluded that the social studies Program of Study should re-incorporate a high-level specific technology course. But technology skills and dispositions will continue to be "infused" in the social studies methods courses.

While the study's conclusion that the technology infusion is successful, the time demands of current technology and the several other NCATE and program assessments lead the author to conclude that basic technology skills are best taught in an independent technology course and then finely tuned in the social studies methods course.

References

Conceptual Framework. Retrieved May 21, 2010 from
http://www.cehs.wright.edu/main/conceptual-framework.php

The International Society for Technology in Education (1996). *National educational technology standards*. Eugene, OR.

Lee, J.K. (2008). Toward democracy: Social studies and TPCK. In the AACTE Committee on Innovation and Technology (Ed.), *Handbook of technological pedagogical content knowledge (TPCK) for educators* (pp. 129-144). New York: Routledge.

National Council for the Accreditation of Teacher Education (1994). *NCATE standards: Unit standards* . Washington, D.C.

National Council for the Social Studies. (1971). *Social Studies Curriculum Guidelines*, Washington, DC: NCSS

National Council for the Social Studies. (2000). *National standards for social studies teachers*, Washington, DC: NCSS

Sarno, D. (May 2, 2010) Apple new No. 1 high tech company, *Dayton Daily News*, A10.

Technology in the College of Education and Human Services. Retrieved May 20, 2010 from http://www.cehs.wright.edu/technology/index.php.