Perceived Versus Actual Computer Skills of Pre-service Physical Educators

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Abstract
Within the service area of a small urban university center, the authors found that few physical educators at all levels, from elementary teachers to college professors, know how to use updated versions of conventional Microsoft technology in their classrooms. A survey instrument was designed and field-tested that would measure the difference between self-perceived versus actual computer skills of pre-service physical education teachers. A survey of perceived computer skills was distributed to twenty (N=20) physical education students enrolled in a pre-service physical education class in a mid-size university. The students were then given a performance based computer test. The findings of this small sample suggested that students tend to be over-confident of their knowledge and skills in using up-to-date technology. It further suggested that the instrument be applied to larger samples to see if students continue in 2009 to overestimate their abilities in all critical skill areas tested. The findings also suggest a need for greater self-monitoring on the part of pre-service physical educators with a critical eye toward self-improvement.

Introduction
As early as 2003 almost 100% of public schools in the United States had computers with some level of internet connectivity (Kleiner & Lewis, 2003). Despite the ever-expanding uses of technology by students and society, many teachers and teachers of teachers still lack the training necessary to effectively integrate technology into their instruction (U.S. Department of Education, Office of Educational Technology 2005; Lambert, Gong, and Cuper, 2008). Colleges of education hold a special interest in teacher technology skills. It is a serious problem when pre-service teachers have not been adequately prepared to integrate technology into the curriculum (Doering, Hughes & Huffman 2003; Lambert, Gong & Cuper, 2008).

The authors have observed a lack of technology preparation seems to be uniform across pre-service teacher certification areas. At a time when the nation’s technology plans call for improved technology preparation for pre-service teachers it appears that Kinesiology or Physical Education pre-service teachers lag farther behind than other certification areas concerning technology integration (U.S. Department of Education, Office of Educational Technology 2005).

Since physical education concerns physical activity and fitness and because many people associate technology with sedentary activity, physical education and technology may seem an unlikely partnership in influencing curriculum and instruction. There is still controversy as to what is considered technology in the physical education field as well as to how it can be integrated into a gymnasium filled with large numbers of active students.

An additional observation made by the expert panel of physical education coordinators is that teacher appraisers often are not informed as to how to evaluate technology as it is used in a physical education setting.
Purpose

The purpose of this inquiry is to measure and compare the perceived computer individual skills (self-report) versus the actual computer skills of Kinesiology students aspiring to become physical educators at a small urban university center in South Texas. The skills measured were related to the uses of technology in elementary or secondary physical education classes.

Current Perspectives and Conceptual Framework

There is very little research available regarding the use of computer technology by physical educators. The scant literature available is contradictory in its findings. Laing, et al. (2006) surveyed pre-service physical education teachers and found their level of technological competence in the classroom to be minimal. It is the observation of the authors in 2009 that there still appear to be few physical educators from elementary to college level that use technology in their classrooms. Contrary to the authors’ observations, Wang and Chen reported (2007) that new education students do hold adequate computer skills. Therefore the instrument developed for this study attempted to answer this important question. Regardless of grade level or subject matter, technological proficiency is an important aspect of classroom teaching (Wang & Chen, 2007).

Procedure

The authors conducted preliminary interviews of eight physical education coordinators (N=8) in the university center service area to get their perspectives on the importance of physical education teachers being able to integrate technology into their work. The coordinators perspectives also were valued regarding the importance of the university in promoting technology skill development among pre-professional physical educators. When asked if today’s physical education teacher need to know how to use a computer, the coordinators overwhelmingly responded “yes,” that knowledge of how to operate a computer was essential in today’s physical education classroom.

Accountability in physical education is critical to successful physical education. One coordinator reported that a physical education teacher did not know how to use a spreadsheet program used by the school district for reporting data. Because data was not entered in a timely manner, reporting student performance on a state-wide physical education exam could not be recorded, accurately analyzed, or reported. The exam had been designed to measure the students’ fitness levels throughout the school year. Because of this failure, the school district was not able to adequately evaluate its physical education program.

Physical education coordinators informed the design of the survey that was used to measure students’ perceived levels of computer knowledge. The survey instrument was reviewed by other kinesiology instructors and revised to ensure content and construct validity. The survey was distributed to twenty (N=20) kinesiology students, each seeking the all-level teacher certification in physical education. This survey was completed voluntarily by physical education students at a branch campus of a mid-sized university (Survey included in Appendix).

The survey used a four-point Likert-type Scale to measure students’ perceptions concerning their computer skills that all physical education teachers are expected to use in classroom situations. These skills included word processing, spreadsheet, Power Point and internet use. After completing the survey, students were given a performance-based computer test.

For the word processing part of the test students were given a document and were asked to perform the following tasks: (a) open the test document, (b) center and bold the title “Chapter One,” (c) delete a paragraph, (d) indent the first line of a paragraph, (e) correct the spelling of three
words, (f) cut, move, and paste one paragraph to a new location in the document, and (g) save the
document under a new name.

The spreadsheet part of the test included the following tasks: (a) open Microsoft Excel, (b) enter
the names of three students, (c) enter four grades for each student, (d) enter the function to
average the grades, (e) format the cells to eliminate decimals, and (f) save the document. The
PowerPoint portion included: (a) create a slide show consisting of three slides, (b) choose a
background other than white, and (c) save the slide show.

For the internet segment of the test students were asked to perform several searches. The
first search was to find what institute developed the “Fitnessgram.” The second search was to find
a physical education lesson plan. The third search asked the students to find a university that offered
an online Masters degree in kinesiology. After the students complete all sections of the test the test
were graded by the authors.

Results

The results of the study revealed a difference between the perceived skill level of the pre-
service physical education teachers and their actual skill level. For each test students needed
to answer seventy percent (70 %) of the questions correctly for a passing score. The pre-service
teachers tended to overestimate their abilities in all skill areas except word processing.

Thirteen of the 20 students failed the spreadsheet test. Of the thirteen students who failed
the spreadsheet test, ten of the thirteen students reported that they had good to excellent computer
skills.

For the Internet test nine of the 20 students failed the test. Seven of the nine students rated
their internet lesson plan searching skills at good to excellent. The ability to perform an internet
search and lesson plan search were the two areas that most students encountered problems. For
the PowerPoint part of the test nine of the 20 students failed this part of the test. All nine of the
students who failed the PowerPoint test rated their computers skills as good to excellent on the
pre-test survey.

Seventeen students failed at least one of the computer skills test. Nine students failed two
different tests and two students failed three tests. Of the seventeen students who failed a test,
fifteen students rated their computer skills as good to excellent. Of the eleven students who failed
two or more test, eight students rated their computer skills at good to excellent.

A limitation of the study is the small number of students included in this study. Because of the
small number the results cannot be generalized to a larger population.

Discussion

Unlike pre-service elementary teachers from earlier studies who underestimated their
proficiency with computer technology, the students in this study tended to over-rate their computer
skills. Eighty-five percent of the students failed at least one part of the test and over half of the
students failed two test or more.

Speculation as to why students over-estimated their skills may be that because computers
are so common in modern society, students may assume that they know more than they really do.

Another possibility is the demand characteristics of the study. Students may have distorted
their response in an effort to please the instructor or to provide what would be the “correct” answer
within a professional learning setting. It is also possible that students have a high self-efficacy
regarding computer uses in general without consideration of more specific applications as were
tested in this study.
Other colleges and universities may want to examine the computer skills of pre-service physical education teachers and implement plans to increase technology skills in this often ignored group of future educators. Surveys may give educators some useful information, but based on the results of this study many of the students overestimated their computer skills. A performance based test may be the best way for educators to determine the level of computer skills of pre-service teachers.
References


Appendix

Gender: Male  Female  Age _____

Please circle the most appropriate response. Four (4) represents the highest level of skill or use and one (1) represents the lowest level of skill or use.

1. At what level do you consider your computer skills?
   4  3  2  1

2. To what degree do you feel technology is useful in the kinesiology classroom?
   4  3  2  1

3. To what degree do you feel you have been prepared by your college classes to use technology in a classroom situation?
   4  3  2  1

4. To what degree do you feel comfortable using technology to manage student information, such as grades or attendance?
   4  3  2  1

5. To what degree do you feel comfortable using technology to assess students?
   4  3  2  1

6. To what degree do you feel comfortable using technology to enhance your teaching productivity?
   4  3  2  1

7. Do you believe you could design a developmentally appropriate kinesiology lesson that incorporates technology?
   4  3  2  1

8. Rate your internet searching skills.
   4  3  2  1