

Why Change? Addressing Teacher Concerns toward Technology

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This national study (n=659) with at least two subjects in each of the 50 United States investigated four questions:

1. What are the relationships among specific teacher variables and teachers' level of concern as indicated by their score on the Stages of Concern Questionnaire (SoCQ)?
2. What are the relationships among teacher demographic variables and teachers' levels of concern as indicated by their score on the Stages of Concern Questionnaire (SoCQ)?
3. Is there a correlation among stages of concern derived from the Stages of Concern Questionnaire and the total score on the Professional Development Survey (PDS)?
4. Is there a difference between teacher scores on the Stages of Concern Questionnaire (SoCQ) based on the level of professional development as indicated by the score on the Professional Development Survey (PDS)?

The researchers have first-hand experience developing, presenting, and evaluating instructional technology training for P-16 practitioners.

Although previous research has focused on teachers' attitudes and concerns toward instructional technology use, technology change, and change in general, there was little data concerning trainees' reaction to, use of, or comfort with technology after the training experience. The findings did support the idea that technology knowledge and experience have a positive effect on teachers' attitudes toward technology. The present study extended the investigation of the influence of technology training for teachers by examining specific aspects of that training and their impact on teacher concerns toward the use of technology.

Design:

This study used quantitative components with descriptive and correlational research designs. Correlation was examined using two dependent variables—scores from the Stages of Concern Questionnaire and the Professional Development Survey—with the independent variables—age; grade level; subject; experience; school description; access to technology; and amount, type, method, site, and content of technology training within the last year. The descriptive element of the study (description of scores on single variables) involved examination of the

samples of respondents on the SoCQ and Professional Development Survey (mean, median; standard deviation to indicate the average score and variability of scores for the samples; frequencies for categorical data). This study used correlational statistics to discover and clarify relationships among two or more variables and bivariate correlational methods to describe the relationship between two variables. Multivariate analysis of variance (MANOVA) was employed to determine if there were significant differences between the sample means.

Methodology:

The target population for this study was P-12 teachers currently using instructional technology in some form in their classrooms. All transactions were electronic, using the Internet and email, respectively, to deliver the instrument and transmit the responses back to the researcher.

Instrumentation:

This study combined two survey instruments to determine the influence of specific factors in P-12 teachers' technology training on their concerns toward the implementation of instructional technology. The first part of the survey instrument was used and modified with permission from the CEO Forum on Education and Technology (STaR chart self-

diagnostic tool, 1997), which was created to follow up on work done by the President's National Information Infrastructure Advisory Council (NIIAC) in the area of instructional technology. The Forum on Education and Technology developed an online instrument to help gauge the use of technology in schools. This study used a modification of one section of the StaR instrument, the Professional Development section. The second part of the survey instrument was the Stages of Concern Questionnaire (SoCQ) (Hall, George, & Rutherford, 1998).

Data Collection:

Data collection was from an online survey. The SoCQ and Professional Development instruments were converted to hypertext markup language and placed on the Internet. Extensive web searches located listservs and newsgroups focusing on P-12 teachers and identified email addresses for school district technology coordinators from all 50 states. The researcher emailed a message to the identified school district's technology coordinator/director, mailing list, and listserv manager, asking them to disseminate the URL for the online instrument to their teachers and members. The responses were emailed back to a specific server, and the data were transferred into a password protected account.

The researcher electronically moved the data from that account into a spreadsheet format for statistical analysis.

Data Analysis:

All analyses were performed using SPSSX (Statistical Package for the Social Sciences). The methods of analysis included canonical correlation, multiple regression, MANOVA, and one-way ANOVA. The one open-ended question was analyzed with Merriam's (1991) standard qualitative methods. The results of the data analysis indicate the following:

Question One. There was strong correlation between Management, Consequence, and Refocusing, and instructional technology training focused on the integration of technology into the curriculum.

Question Two. There was a correlation between the subject taught and the length of technology use with the Management, Consequence and Collaboration Stages of Concern subscores.

Question Three. The Collaboration and Informational stages of concern were the most potently predicted by the PDS score.

Question Four. The Professional Development Survey (PDS) scores (High, Medium, or Low) significantly impact the Awareness,

Consequence, Collaboration, and Refocusing scores on the Stages of Concern Questionnaire.

These findings suggest that in spite of the limitations that are present in this study, there are exciting conclusions to be drawn from the data. In spite of the school administrators and legislators who may be resistant to innovative instructional practices, there are teachers in the field who are embracing and creatively using technology to enhance their teaching and their students' learning. The more training and experience teachers have integrating instructional technology into curriculum delivery, the sooner those teachers will accept and optimally use the technology in their classrooms.

The kinds of questions the teachers ask about technology and the way the teachers use technology evolve as they experience the change over time. Early questions reflect self-concerns and are more reactive. When these questions are answered, teachers can focus on the impact of technology on their students. In practice, however, administrators and trainers frequently address student learning before addressing the need for teachers to first be comfortable with the new technology tools and strategies.

Based on this study, effective technology staff development should include the following criteria:

1. It should be viewed as a part of long-term plans for overall teacher development and should be allowed and encouraged to build over time.
2. It should be focused on bringing about changes in individuals instead of groups, first in terms of attitudes, then in terms of knowledge and skills.
3. It should be adapted as teachers change over time.
4. It should be moved beyond basic skills and address curriculum integration.
5. It should be assigned sufficient time and follow-up to effect real change in teacher use of technology.
6. viewed as a high-priority investment for schools.

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