Vicarious Learning Experiences and Goal Setting: Impact on Preservice Teachers’ Self-Efficacy for Technology Integration

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Presentation Outline

- Background
- Purpose of the Study
- Research Design
- Findings
- Educational Implications
- Limitations and Suggestions for Future Studies

Background (1 of 6)

- Increased availability and support for classroom computer use ≠ integrated computer use by teachers
- Factors other than technical knowledge and skills contribute to teachers’ success with technology integration
Background (2 of 6)

- Self-efficacy beliefs are instrumental to motivating people and influencing how people behave.
- Increased self-efficacy leads to increased performance and accomplishment.
- By increasing preservice teachers' self-efficacy for technology integration, increased performance in the use of computers is expected and observed.

Background (3 of 6)

- Methods for increasing self-efficacy – Bandura’s social cognitive theory
  - Personal mastery
  - Vicarious experiences
  - Social persuasion
  - Physiological indicators

Background (4 of 6)

- Vicarious experiences: A powerful option
  - Personal experiences are difficult to arrange
  - Use of models provides information about how to accomplish the task
  - Observing models can also increase confidence for performing similarly
Background (5 of 6)

Methods for increasing self-efficacy – Locke and Latham’s goal setting theory
- Learners’ judgments of self-efficacy increase in both accuracy and strength when goals are made explicit.

Background (6 of 6)

Little work has been done to examine how vicarious learning and goal setting might be combined to create even more accurate and more robust judgments of self-efficacy.

Purpose of Study

- Purpose:
  - to examine the impact of vicarious learning experiences and goal setting on preservice teachers’ self-efficacy for technology integration

- Research Question:
  - What are the effects of vicarious experiences (VE) and goal setting (GS) on preservice teachers’ judgments of self-efficacy for technology integration?

- Three Hypotheses:
  - VE lead to increase in judgments of self-efficacy
  - GS leads to increase in judgments of self-efficacy
  - VE and GS lead to the greatest increase in judgments of self-efficacy
Research Design

- A 2 x 2 (Vicarious Experiences x Goal Setting) mixed factorial research design

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Experimental Conditions (1 of 4)

- Vicarious learning experiences were provided by VisionQuest software
  - It incorporates examples of technology-using teachers
  - It allows interactive learning
  - It maximizes the effects of vicarious learning experiences

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Experimental Conditions (2 of 4)

- Participants in NVE conditions explored a WebQuest website

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Experimental Conditions (3 of 4)

- Explicit goals were provided for GS conditions

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Experimental Conditions (4 of 4)

- Participants in NGS conditions followed the instructions for working with VisionQuest or WebQuest
- Worksheets were required for all conditions to complete

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Participants

- Students from EDCI 270, a two-credit introductory educational technology course
- N = 280 (92 males and 188 females)
- Participants ranged in age from 18 to 38 (M = 19.88)
- Participants’ majors included elementary ed (n = 105), secondary ed (n = 113), pre-kindergarten to kindergarten ed (n = 13), and others (n = 49)
- 96% of the participants indicated a career choice of becoming school teachers
Data Collection

- Demographic information
  - 17 short-answer questions
- Computer Technology Integration Survey (CTIS)
  - Developed for this study
  - Used as pre-survey and post-survey measures
  - 21 items, 1-5 rating scale
  - Validated by factor analysis
  - Highly reliable (α = .94 for pre-survey and α = .96 for post-survey)

Data Analysis

- Demographic information
  - Frequencies
  - Qualitative pattern analysis
- Survey data
  - Means and standard deviations
  - ANOVAs
  - Multiple Comparisons

Findings (1 of 2)

- Pre-Survey
  - No significant differences among four experimental groups
- Post-Survey
  - Interaction effect of VE and GS: F = 0.38, p = .5388
  - Effect size (η) = .40 signifies a large effect with 40% of the variance being explained by the specific conditions in this study
Findings (2 of 2)

- Post-Survey - Pair-wise differences among the four experimental groups
  - VE/GS > NVE/GS (p < .0001)
  - VE/GS > VE/NGS (p = .0010)
  - VE/GS > NVE/NGS (p < .0001)
  - NVE/GS < VE/NGS (p = .4834)
  - NVE/GS > NVE/NGS (p = .0155)
  - VE/NGS > NVE/NGS (p = .0020)

Educational Implications

- Use of both vicarious learning experiences and the incorporation of goals can positively impact students' self-efficacy beliefs for technology integration
- Higher levels of computer self-efficacy is expected to lead to increased performance with computer-related teaching practices
- As our future teachers achieve high confidence levels for technology integration and develop powerful strategies for technology implementation, meaningful technology use can come closer to being the norm, rather than the exception, in our K-12 classrooms

Limitations

- Generalizability
  - Participants were typical residential undergraduates in the Teacher Education program
  - Findings can only be generalized to preservice teachers with similar characteristics
- Short-time exposure (experimenting during a 2-hour lab session)
- Format of the goals lent themselves to cognitive scaffolding
For Future Studies

- Administer the experiment over a longer period of time
- Try out the same research design and experiment in different types of teacher education programs
- Examine teachers’ actual technology uses to verify the assumed relationship between high efficacy and increased technology integration
- Further validate the instrument developed in this study

Questions?