TECHNOLOGY USE, TECHNOLOGICAL SELF-EFFICACY AND GENERAL SELF-EFFICACY AMONG UNDERGRADUATE NURSING FACULTY

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ABSTRACT

Objective: A non-experimental, descriptive correlational design was used to describe and explore the relationship among technology use, technological self-efficacy and general self-efficacy in undergraduate nursing faculty who teach at a Commission on Collegiate Nursing Education (CCNE) accredited nursing program.

Methods: Undergraduate nursing faculty (N= 272) from a nationwide sample completed a sociodemographic questionnaire, the Roney Technology Use Scale (RTUS), the Technology Self-Efficacy Scale (TSES) and the General Self-Efficacy Scale (GSES) through online surveys.

Results: Data analysis revealed that participants who taught didactic content had moderate technology use as compared to teaching didactic and clinical/laboratory who content had high levels of technology use. Correlations were strongest between how faculty rated their relationship with innovation utilizing the framework of Rogers's Diffusion of Innovation Theory and general self-efficacy (= .615, $p < .01$) and the perceived impact of technology on student learning and general self-efficacy (=.333, $p <.01$). A weak relationship between age and technological self-efficacy (=.127, $p < .05$) was also found.

Conclusion: This study adds the following points to this topic: (1) faculty should have access to a technology point person since many in this study state that they are on their own for learning and integrating technology in their teaching; (2) most faculty are not familiar with/ have not taken the Technology Informatics Guiding Education Reform (TIGER) Initiative training; (3) nursing curriculum preparing students at the masters and doctoral levels need to increase the amount of training and education in the area of technology; and (4) despite being digital immigrants, faculty are using technology and an inverse relationship was noted between age and technological self-efficacy.

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INTRODUCTION

Today's nurses require an expanded knowledge of technology to function in highly complex patient-care environments (NACNEP, 2010a). To support this goal, undergraduate nursing faculty are expected to utilize innovation in their teaching, yet this can be particularly stressful if they have limited technical knowledge (Axley, 2008). Millennial students' strong preference for technology has caused educators to reevaluate their instructional techniques (Lancaster, Wong & Roberts, 2011). External forces, such as university administrators and accrediting agencies, add to this pressure by articulating their expectations for nursing programs to integrate innovation and technology into their curricula. Despite this, one question has been left unanswered: Do nursing faculty feel that they are prepared to meet this challenge? The purpose of this research study was to explore technology use, technological self-efficacy, and general self-efficacy among undergraduate nursing faculty.

METHODS AND MATERIALS

This quantitative study utilized a non-experimental descriptive correlational research design to describe technology use, technological self-efficacy, and general self-efficacy among undergraduate nursing faculty who teach at one of 651 CCNE accredited baccalaureate nursing programs in the United States.

Inclusion criteria for participation in this research study were: faculty member who teaches full time in an undergraduate nursing programs as identified on the nursing program's website; individual email address must be available on the nursing program's publicly available website; registered nurse (RN) or advanced practice registered nurses (APRN) as identified by credentials on the nursing program's publicly available website; and have taught in the undergraduate nursing program over the past year (clinical or didactic course content). A sociodemographic questionnaire, the Roney Technology Use Scale (RTUS), the Technology Self-Efficacy Scale (TSES), and the General Self-Efficacy Scale (GSES) were used in this research.
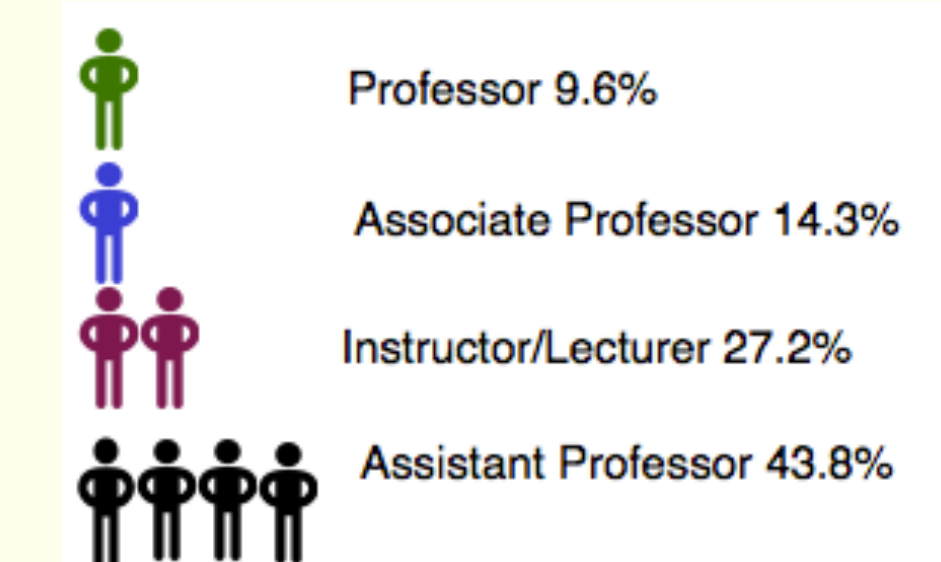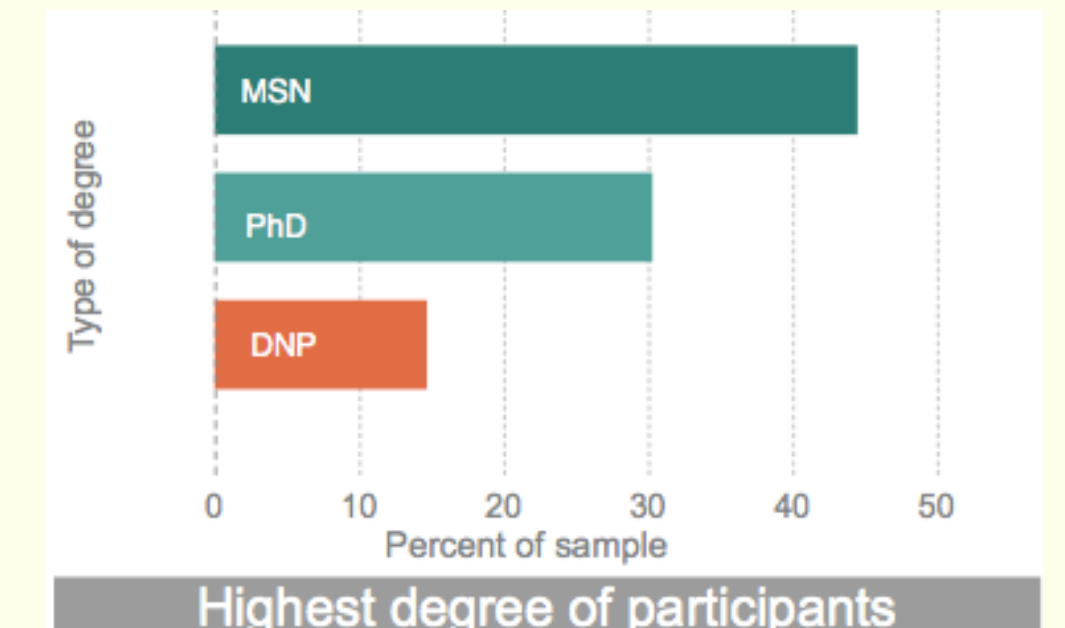
RESULTS

Systematic sampling randomly identified nursing faculty (n=1880) to receive invitation to participate. A total of 272 individuals participated (14.5% response). Results revealed no significant relationships at the bivariate level, although years teaching approached significance for supporting lower levels of technology use (P =-.299 p =.063). It is possible that those who have been teaching nursing for a longer period of time may also be older however results of the analysis between age and years of teaching were non-significant in this research sample.

Participants reported a moderate technology use in general teaching (M=62.4, SD=12.6). Most (n=270) were ranked as having a moderate level of technology. Data analysis revealed that while faculty participants who only taught didactic content had moderate technology use (M=62.9, $SD=13.6$) as measured by the RTUS, those who taught clinical/laboratory content had high levels of technology use (M=24.1, SD=6.61). A two-tailed Spearman's rho was employed to test correlations between how faculty rated their relationship with innovation on the Rogers's Diffusion of Innovation continuum and general self-efficacy. Results showed there was a significant, strong positive correlation between how faculty saw themselves/their relationship with innovation and self-efficacy P =.615, $p \leq .01$, and a significant, moderately strong positive correlation between the perceived impact of technology and self-efficacy =.333, $p \leq .01$. Bivariate analyses were conducted between 10 demographic variables and technological self-efficacy. Results of this analysis revealed a positive, weak relationship between age and technological self-efficacy (P =.127, $p \leq .05$). Participants selected phrases that they most identified with based on Rogers's Diffusion of Innovation (2003). Almost half (n=127, 46.7%) described them self as "early majority." None of the participants in this research study identified themselves as "late majority" or "laggards" related to innovation.

Of the 272 participants, only one individual rated himself or herself as having low technological self-efficacy, while 173 (63% of the sample) rated themselves as having high technological self-efficacy (M=9.66, SD=3.26). On average, participants noted a high level of technological self-efficacy (M=9.66, $SD=3.26$), and a high level of general self-efficacy (M=34.5, $SD=4.10$) Results revealed a significant, moderately strong inverse relationship between the two variables (P =-.353, $p <.01$). The coefficient of determination was r^2=.12, indicating 12% of the variance in general self-efficacy was due to technological self-efficacy; 88% of the variance was unexplained.

PARTICIPANTS

Highest degree of participants

Professor 9.6%

Associate Professor 14.3%

Instructor/Lecturer 27.2%

Assistant Professor 43.8%

Formal education for using technology in teaching:
About 13% received training in MSN program
About 10% received training in Doctoral program
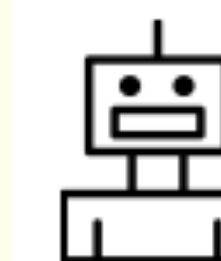
Three quarters of participants believe technology has a significant impact on student learning

DISCUSSION/ CONCLUSIONS

This study adds the following points to this topic: (1) faculty should have access to a technology point person since many in this study state that they are on their own for learning and integrating technology in their teaching; (2) most faculty are not familiar with/ have not taken the Technology Informatics Guiding Education Reform (TIGER) Initiative training; (3) nursing curriculum preparing students at the masters and doctoral levels need to increase the amount of training and education in the area of technology; and (4) despite being digital immigrants, faculty are using technology and an inverse relationship was noted between age and technological self-efficacy.