



# Factors Predicting Mastery of Informatics Competencies in Doctor of Nursing Practice Students

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## Problem Statement

Healthcare is undergoing rapid transformation related to:

- Increasing use of information technology in care delivery
- Reimbursement
- Utilization of big data

Doctor of Nursing Practice (DNP) providers in a position to use information technology to monitor/improve health care outcomes.

American Association of Colleges of Nursing (2006) and National Organization of Nurse Practitioner Faculties (2011) recommend that DNP graduates be competent in the use of information technology.

DNP students have varying levels of education and experience -

- What is the course content necessary to provide that DNP graduates master informatics knowledge and skills?

Factors predicting the ability of DNP students to master Informatics competencies requires further study. Studies have shown:

- Graduate students have higher scores than undergraduate in some areas of informatics skills
- Highest academic degree obtained predicted mastery of some informatics competencies
- Understanding student baseline experience and education is important in the design and revision of Informatics courses.

The **purpose** of this study was to analyze factors which may predict DNP students mastery of competencies in an online Informatics course.

## Methodology

- A descriptive design was used to examine the effects of experience and education on mastery of Informatics competencies.
- Data collected from a convenience sample of students:
  - Self-assessment rating their experience with information technology by responding Yes or No in response to:
    - Have you had experience working with Meaningful Use (MU); Datasets;
    - Clinical support systems for health professionals (CSS); e-Health systems?
  - Demographic characteristics
- Faculty assessed students' mastery of competencies on MU, datasets, CSS, and e-Health.
- Values based on competency scores were assigned: 1 (mastered) or 2 (did not master).
- Logistic regression was performed to assess the impact of experience and highest academic degree obtained on competency mastery with data collapsed into two categories (mastered or did not master).
- *P*-values less than 0.05 were considered statistically significant.
- The Institutional Review Board designated the study as exempt.



## Results

Student demographics: 91% (n = 50) of students were female and 9% (n = 5) were male; 80% (n = 44) of students were admitted with a BSN and 20% (n = 11) were admitted with a MSN.

### Comparison of Students with/without experience with MU and Mastery of MU Competency

Experience with MU	With	Without
Mastered	75.9%	38.5%
Did not master	24.1%	61.5%

Analysis revealed that more students with experience in MU mastered the MU competency than students without experience with experience the strongest predictor for mastering the MU competency ( $p=.001$ ) after controlling for highest degree obtained ( $p = .087$ ).

### Comparison of Students with/without experience with Datasets and Mastery of Data Entry and Data Analysis Competency

Experience with Datasets	With	Without
Mastered	55.6%	67.9%
Did not master	44.4%	32.1%

A greater number of students without experience with datasets mastered this competency compared to students with experience with neither experience or degree predicting mastery of this competency.

## Results

### Comparison of Students with/without experience with databases and Mastery of Exploration of Databases Competency

Experience with Databases	With	Without
Mastered	81.5%	82.1%
Did not master	18.5%	17.9%

Students with and without experience with exploration of databases mastered this competency and experience or degree did not predict mastery of this competency.

### Comparison of Students with/without experience with CSS and Mastery of CSS competency

Experience with CSS	With	Without
Mastered	83.3%	67.7%
Did not master	16.7%	32.3%

Analysis revealed that experience with clinical support systems was the strongest predictor for mastering the CSS competency ( $p = .03$ ) after controlling for highest degree obtained ( $p = .3$ ). The interaction between experience and degree approached significance ( $p = .08$ ).

### Comparison of Students with/without experience with e-Health and Mastery of e-Health competency

Experience with e-Health	With	Without
Mastered	75.7%	33.3%
Did not master	24.3%	66.7%

A greater number students with experience with e-Health mastered this competency than those without experience. The strongest predictor for mastering the e-Health competency was experience ( $p=.03$ ) after controlling for highest degree obtained ( $p = .18$ ).

## Significance

- In competencies focused on analysis or application of informatics content, students with prior experience were more likely to master competencies focused on those areas.
- In competencies focused on skills such as working with datasets or databases, experience did not impact competency mastery.
- Faculty should consider tailoring the course modules for novice and experienced learners to facilitate student mastery of informatics competencies.