Nurse Educator Self-Assessed Technology Competence and Online Teaching Efficacy: A Pilot Study

Dr. Sally L. Richter, EdD, RN  Assistant Professor
Dr. Laurie J. Ware, PhD, RN, CNL  Associate Dean and Professor
Introduction

- Profound changes in nursing practice call for profound changes in nursing education.
  (Benner, Sutphen, Leonard, & Day, 2010)

- Proposed Transformations
  (Valiga, 2012)
Many faculty embrace online learning.

Others perceive knowledge and skills associated with navigating online learning as a barrier to education.

(Hoffmann & Dudjak, 2012)
A lack of significant research exits related to faculty efficacy in the use of technology for teaching in the online environment (Chang et al., 2011; Petit Dit Daniel et al., 2013; Sword, 2012).
Purpose of Study

• Investigate educational technology competence and online teaching efficacy

• Explore the relationship between educational technology competence and online teaching efficacy
Research Questions

• What is the self-assessed competency of nurse educators in the use of educational technologies?

• What are nurse educators’ sense of efficacy for online teaching?

• What is the relationship between self-assessed competency in the use of educational technologies and nurse educators’ online teaching efficacy?

• What is the impact of demographic variables on educators’ online teaching efficacy?

• What is the best predictor of online teaching efficacy?
Online Teaching Efficacy

Sources of efficacy information
Verbal persuasion
Vicarious experience
Physiological cues
Mastery experience

Cognitive Processing

Self-assessment of Online Teaching
Self-assessment of Educational Technology competence

Online Teaching Efficacy

Performance

Consequences of Online Teaching Efficacy related to goals, effort, persistence, etc.
Methodology

- Descriptive Correlational Design
- Setting
  - State University System and two private Colleges
- Sample
  - Nurse educators teaching at least 51% of course content online within a Baccalaureate or Graduate Level Program
Instrument 1.

Sense of Efficacy for Online Teaching

- Measures perceived sense of efficacy related to subscales
- Factor Analysis prior study
- Prior reliability coefficient of 0.93

(Robinia, 2008)

Subscales include:

- Student Engagement
- Instructional Strategies
- Classroom Management
- Use of Computers
Instrument 2.

Educational Technology Competence

- No prior validity or reliability
- Used as assessment with faculty development

(Valiga, 2012)

Subscales:
- Area of Competency
- Help Students Achieve
- Implement Principles of Good Teaching
- Create Learning Experiences
Results of Study

Take a look...
Sample and Participant Profile

N=64 Nurse educators teaching 51% or more course content online in BSN or Graduate Level Program

Female (98.3%, n=59)
- 51 Years of age or older (75%, n=43)
- Doctoral degree (78.3%, n=47)
- tenure track (44.3%, n=27), non tenure track (36.1%, n=22)
- Over 10 years teaching experience (51.7%, n=31)
Q1. What is the self-assessed competency of nurse educators in the use of educational technologies?

Participants indicated that they were “somewhat competent” to “very competent” in the use of educational technologies based upon subscales:

- Area of competency (85.63%), $M=35.60$, $SD=5.69$
- Help students achieve (97.23%), $M=46.77$, $SD=4.58$
- Implement principles of good teaching (98.87%), $M=26.05$, $SD=2.35$
- Create Learning Experiences (65.30%), $M=37.20$, $SD=7.89$

(Total Item $M=145.40$, $SD=16.99$, Minimum 100-Maximum 174)

Likert Scale 1=not all competent to 4=very competent
## Self-Assessment of Educational Technology Competence Scale

**Likert scale of 1 (not competent) - 4 (very competent)**

<table>
<thead>
<tr>
<th>Domain</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of competency</td>
<td>35.60</td>
<td>5.69</td>
<td>17-52</td>
<td>0.92</td>
</tr>
<tr>
<td>Help students achieve</td>
<td>46.77</td>
<td>4.58</td>
<td>17-52</td>
<td>0.90</td>
</tr>
<tr>
<td>Implement principles of good teaching</td>
<td>26.05</td>
<td>2.35</td>
<td>17-52</td>
<td>0.86</td>
</tr>
<tr>
<td>Create Learning Experiences</td>
<td>37.20</td>
<td>7.89</td>
<td>17-52</td>
<td>0.90</td>
</tr>
<tr>
<td>DUSAETCS Score</td>
<td>145.40</td>
<td>16.99</td>
<td>100-174</td>
<td>0.95</td>
</tr>
<tr>
<td>Content Validity Index</td>
<td></td>
<td></td>
<td></td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: DUSAETCS Score = total score from the Duke University School of Nursing Educational Technology Competency Scale
Q2. What are nurse educators’ sense of efficacy for online teaching?

Participants indicated their sense of efficacy for online teaching was “quite a bit” to “a great deal” for the subscales:

- student engagement (64.5%), M= 46.70, SD= 7.51
- instructional strategies (79.3%), M=58.20, SD=7.58
- classroom management (78%), M=58.60, SD=6.99
- uses of computers (78.25%), M=59.65, SD=8.34

(Total item M=231, SD=27.7, Minimum 33 – Maximum 297)

Likert scale 1 “nothing” to 9 “a great deal”
<table>
<thead>
<tr>
<th>Efficacy Domain</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student engagement</td>
<td>46.70</td>
<td>7.51</td>
<td>31-60</td>
<td>0.88</td>
</tr>
<tr>
<td>Instructional strategies</td>
<td>58.20</td>
<td>7.58</td>
<td>38-72</td>
<td>0.89</td>
</tr>
<tr>
<td>Classroom management</td>
<td>58.60</td>
<td>6.99</td>
<td>38-72</td>
<td>0.84</td>
</tr>
<tr>
<td>Use of Computers</td>
<td>59.65</td>
<td>8.34</td>
<td>32-72</td>
<td>0.83</td>
</tr>
<tr>
<td>MNESEOT Score</td>
<td>231.00</td>
<td>27.70</td>
<td>33-297</td>
<td>0.91</td>
</tr>
</tbody>
</table>
Q3. What is the relationship between self-assessed competency in the use of educational technologies and nurse educators’ online teaching efficacy?

- Pearson correlation coefficient \( (r = .56, p < .001) \)
- Shared variance is 31%
- A moderately strong positive relationship between the two variables
Q4. What is the impact of demographic variables on educators’ sense of efficacy for online teaching?

**Years of Teaching Experience**
- No significant difference found between
  - 10 years or less of experience teaching ($M = 28.37$, $SD = 3.42$)
  - 10 years or more of experience teaching ($M = 29.52$, $SD = 3.48$)
  - $t(54) = -1.25$, $p = .22$, two-tailed

**Comparison by Age**
- No significant difference found between
  - Group 1: age 50 and younger
  - Group 2: age 51-60)
  - One-way between groups analysis of variance
    ($F (2,52)=1.72$, $p = .19$)
Q4. Continued

**Appointment Type**
- Levine's test of equality of variance significance level .41, > \( p = .05 \)
- No significant difference
  - Tenured/Tenure track (\( M = 29.17, SD = 3.45 \))
  - Non-Tenured track (\( M = 28.62, SD = 3.54 \))
  - Independent Samples t-tests (\( t(54) = -.59, p = .56, \) two tailed)

**Degree**
- Levine's test significance level .44, > \( p = .05 \)
- No significant difference
  - Master degree (\( M = 29.15, SD = 3.86 \))
  - Doctoral degree (\( M = 28.89, SD = 3.40 \))
  - Independent Samples t-tests (\( t(54) = -.23, p = .82, \) two-tailed)
Q5. What is the best predictor of online teaching efficacy

OLS Regression used to evaluate best predictor

- Online Teaching Experience
- Professional Development
- Perceived Support from Faculty Colleagues
- Received Instructional Design Support
- Perceived Competency

$F$-test is significant ($F=4.773; p=0.002$) indicating good model fit $R$-square of 0.368

Competency is positively related to online teaching efficacy ($b=0.112; p < 0.001$)
## Best Predictor of Online Teaching Efficacy

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>11.525</td>
<td>.043</td>
<td>.582</td>
<td></td>
</tr>
<tr>
<td>Online Teaching Experience</td>
<td>1.085</td>
<td>5.089</td>
<td>.141</td>
<td>2.265</td>
</tr>
<tr>
<td>Professional Development</td>
<td>-1.049</td>
<td>1.076</td>
<td>.590</td>
<td>.029</td>
</tr>
<tr>
<td>Perceived Peer Support</td>
<td>-.1049</td>
<td>1.242</td>
<td>.120</td>
<td>1.076</td>
</tr>
<tr>
<td>Instructional Design Support</td>
<td>.112</td>
<td>1.273</td>
<td>-.147</td>
<td>.873</td>
</tr>
<tr>
<td>*Perceived Competency</td>
<td>.112</td>
<td>.027</td>
<td>.554</td>
<td>.388</td>
</tr>
</tbody>
</table>

Dependent Variable: Online Teaching Efficacy Scale
Limitations of the Study

- Convenience sample
- Survey fatigue
- Lack of generalizability
- Self-report bias
- Competency Scale, a self-assessment tool not used in prior research
Discussion of Findings

- The DUSAETCS competency scale is the best predictor of online teaching efficacy for this group of participants.

- These findings are congruent with the findings reported by Robinia and Anderson (2010), where high online teaching efficacy scores correlated positively with mastery and preparatory experiences.

- High Levels of personal educational technology competence positively influence online teaching efficacy. Reflecting the cyclical nature of teaching efficacy (Tschannen-Moran, Woolfolk, and Hoy, 1998).

- Online teacher efficacy levels affect performance that in turn loops outcome feedback into new sources of efficacy information such as sense of teaching or technology competence (Robinia, 2008).
Implications for Nursing Education

• Appropriate incentives
  • Appropriate external support
  • Preparatory courses (which could be considered investment in student learning)
  • Release time
Recommendations

- Use the Competency Survey in other studies
- Repeat the study
Questions?
References


• Sword, T. S. (2012). The transition to online teaching as experienced by nurse educators. Nursing Education Perspectives, 33, 269-271.