



Evidenced-Based Teaching Strategies that Facilitate Transfer of Knowledge Between Theory and Practice: What are Nursing Faculty Using?^{1,2}

Linda M. Culyer, DNS, RN, ANP^{a,*}, Linnea Love Jatulis, PhD, RN^b,
Patricia Cannistraci, DNS, RN, CNE^c, Catherine A. Brownell, PhD, RN^a

^a Utica College, Utica, NY 13502, USA

^b The Sage Colleges, Troy, NY 12180, USA

^c Excelsior College, Albany, NY 12203, USA

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ABSTRACT

The purpose of this mixed-method descriptive study was to explore prelicensure nursing faculty knowledge, beliefs in effectiveness, and use of evidence-based teaching strategies that facilitate transfer of knowledge between theory and practice and facilitators and obstacles to their use. Findings revealed that the top 5 strategies used were (a) reflection, (b) simulation, (c) small groups, (d) case-based learning, and (e) problem-based learning. Implications for nursing education practice are discussed.

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Introduction

Contemporary nursing education is challenged by the exponential growth of technology, biosciences, and globalization, which impact not only nursing practice but also nursing education (Benner, Sutphen, Leonard, & Day, 2010; Shindell, 2011). More specifically, new nurses emerge from their educational programs facing patient care challenges in the practice setting that are diverse with complicated treatments requiring astute assessments and nursing management calling upon nursing science and knowledge (Benner et al., 2010). The proliferation of knowledge has led to an additive curriculum that fosters linear thinking and teacher-centered pedagogies (Day, 2011; Kahl & Venette, 2010; Shindell, 2011). Traditionally, nursing education has been organized in a linear format, based upon conventional pedagogies where outcomes and competency-based strategies are common (Ironside, 2014). However, conventional pedagogies and past practices are no longer adequate to meet the demands of current practice, which has led to calls for transformation

of nursing education (Benner et al., 2010; Ignatavicius & Chung, 2016; Institute of Medicine, 2011).

Reform of educational practice underscores the need for a paradigm shift from traditional pedagogies to ones that are innovative, integrative, and student-centered (Benner et al., 2010). Doing so would better help students with integration, analysis, and synthesis based on evidence that the relationship between knowledge and action is more complex and multidirectional than linear (Benner et al., 2010; Botma, Van Rensburg, Coetzee, & Heyns, 2015). For example, simulation and narrative structures, such as narrative pedagogy are pedagogies of integration (Benner et al., 2010; Jansen, 2015). Simulation is an evidence-based teaching strategy (EBTS) that is associated with transfer of knowledge between theory and practice (Booth et al., 2017; Ewertsson, Allvin, Holmstrom, & Blomberg, 2015; Tschannen, Aebersold, McLaughlin, Bowen, & Fairchild, 2012), and narrative pedagogy fosters students' thinking (Ironside, 2015). Other examples of strategies that are integrative and facilitate transfer are interactive videos and computerized learning (Davidson & Candy, 2016; Wiles, Rose, Curry-Lourenco, & Swift, 2015), reflection (Jayasree & John, 2013), problem-based learning (PBL) with cooperative small group work and role play (Chan, 2012), case-based learning (CBL; Forsgren, Christensen, & Hedemalm, 2014; Lounsbury & Pittenger, 2011), and unfolding case studies (Day, 2011).

However, despite the call for curricula redesign utilizing innovative and integrative strategies, there is limited research as to what

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* Corresponding author. Tel.: +1 315 792 3077; fax: +1 315 792 3248.

E-mail addresses: liculyer@utica.edu, (L.M. Culyer), ljatulis@icloud.com, (L.L. Jatulis), pcannistraci@excelsior.edu, (P. Cannistraci), cbrowne@utica.edu, (C.A. Brownell).

faculty know about and the extent to which they use evidence-based strategies (Brown, Kirkpatrick, Greer, Matthias, & Swanson, 2009; Herinckx, Munkvold, Winter, & Tanner, 2014; Wisdom, Chor, Hoagwood, & Horwitz, 2014). The purpose of this mixed-method descriptive study was to explore prelicensure nursing faculty's knowledge, belief in effectiveness, and use of EBTS that facilitate transfer of knowledge, along with facilitators and obstacles affecting transfer.

Literature Review

Transfer

Transfer is the ability to use learned knowledge in a similar or new and novel situation (Mayer & Wittrock, 2006). As health professionals, transfer of knowledge is typically from the classroom to real-life situations, such as the clinical setting, and because not all patient situations can be taught (Botma et al., 2015; Lounsbury & Pittenger, 2011), it is essential to foster students' ability to develop thinking and reasoning skills with the ability to transfer knowledge to new or novel patient situations. According to Kantar (2014), consideration needs to be given to thinking and transfer of knowledge as key educational outcomes of nursing curricula.

Faculty Knowledge About Evidenced-Based Teaching Strategies

Oermann (2007) suggests nursing faculty often teach as they were taught, which is based on tradition rather than available evidence, or they may be unaware of research that has been done. Oermann suggests that reflecting on current teaching practice allows one to ask if there is a better way to teach and, then, recommends utilization of the literature by using multiple databases to research different teaching strategies to guide their educational practice.

Patterson and Klein (2012) investigated the types of evidence nurse educators used for teaching practice, what factors influenced incorporation of this evidence into teaching, and what process was used to change their teaching practice. The results revealed that databases such as CINAHL, EBSCO, and MEDLINE were the most frequently used sources of evidence for teaching practice (93.7%). The primary evidence that prompted use of a new or different strategy was journal articles. Other sources used were written in-class feedback, course evaluations, student comments, examination data, exposure to new theory, conferences, and colleagues. Barriers consisted of colleagues, administration, students, workload issues, and time. Results from the narrative questions revealed that 25% of the participants identified institutional barriers as a reason for not using evidence-based teaching practices.

Specific Evidenced-Based Teaching Strategies That Faculty Use

Brown et al. (2009) used a mixed-method descriptive study that employed a researchers' developed tool design to investigate pedagogical teaching/learning approaches and teaching/learning strategies. The instrument included multiple answer checkboxes or drop-down lists that included 40 possible teaching strategies as to the types of innovative teaching strategies used by faculty in nursing education. Analysis of qualitative content identified two themes: teacher-centered and learner-centered. From the drop-down list of strategies, the results revealed that, for more than 70% of the participants, evidence-based, lecture, discussion, case-based, and multimedia strategies were used and integrated into the course in order to engage students. Of these strategies, participants found case-based evidence and client/patient care strategies as most helpful. However, the authors found that although 78% of the participants used lecture as a strategy, only 17% identified it as a method to assist in student

teaching. Other findings revealed that narrative/storytelling, simulation, and case-based were considered most innovative with critical thinking, knowledge acquisition, and independent learning to be essential outcomes of these strategies (Brown et al., 2009, p. 156). Analysis of qualitative content identified two themes: teacher-centered and learner-centered. The findings revealed the faculty role was one of facilitator (88%), whereas active learner (87%) was a role faculty identified for the student. More recently, Staykova, Von Stewart, and Staykov (2017) found that traditional strategies coupled with active, innovative strategies that are student-centered promote student learning.

Facilitators and Barriers to Use of Evidenced-Based Teaching Strategies

Shindell (2011) investigated factors that affected faculty use of active learning strategies, such as cooperative learning, PBL, and simulation. The results revealed that the greatest barrier to use was time, that is, lack of time for preparation, implementation and faculty development. Additional barriers to use included lack of administrative and colleague support within the organization.

In a descriptive correlational study, Hebenstreit (2012) examined the relationship of innovative behaviors and the perceived level of structural empowerment of baccalaureate nurse educators. The findings revealed that nurse educators perceived themselves to be moderately empowered. Hebenstreit found significant and positive correlations between structural empowerment and innovative behavior. If faculty feel empowered within the organization, it can positively affect the faculty's behavior, attitude and, therefore, their teaching.

Methodology

Design

This was a mixed-method design that included a researchers' designed survey composed of a 13-item questionnaire with a total of six open-ended questions that examined prelicensure nursing faculty knowledge, beliefs in effectiveness, and use of EBTS that facilitate transfer of knowledge, along with identifying facilitators and obstacles to their use. Descriptive statistics were used to analyze demographic characteristics, faculty knowledge, belief in effectiveness, and use of EBTS. Correlational data were analyzed using Spearman rank order correlation and chi-square test for independence to analyze any significant relationships (Pallant, 2013). Themes were identified through content analysis of the open-ended questions.

Participants and Data Collection

Participants were a convenience sample of nursing faculty who taught in prelicensure nursing education programs at the associate and baccalaureate levels in New York State (NYS). A list of all nursing schools and colleges was formulated by using the New York State Education Department website (<http://www.op.nysed.gov/prof/nurse/nurseprogs.htm>, n.d). The population was defined by creating a database of all nursing faculty with a public e-mail address on the school's website (Birkhead, 2015). Inclusion criteria were current nursing faculty that taught either full-time or part-time in either the classroom, clinical, laboratory, simulation setting, or any combination of each teaching environments regardless of their academic degree or employment status. Upon institutional review board (IRB) approval, representing 68 schools encompassing both associate and baccalaureate programs, there were 1,569 initial e-mails sent to all nursing faculty listed on the database seeking voluntary participation in the study. A total of 115 individuals were excluded from the study for the following reasons: schools needing their own IRB approval,

those who did not teach in prelicensure programs, rejected e-mails, and individuals opting out of the study. The e-mail contained a link to SurveyMonkey® for the online questionnaire. Completing the survey served as consent to participate. There was a total of 166 responses received, representing an 11% response rate. There were no identifying data on the results regarding any school or participant information, maintaining participant anonymity. The results are presented as aggregate data.

Survey Tool

Cronbach's alpha (.87) was used to assess the survey tool, suggesting good internal consistency reliability. The first section of the tool elicited demographic data on age, gender, number of years teaching nursing, employment status, type of nursing program, educational preparation, type of institution, and type of teaching environment where they taught, such as classroom, laboratory, simulation, or clinical teaching.

Using a 4-point Likert scale, the second section of the survey asked participants to identify how knowledgeable they were with each strategy, in their opinion, how effective the strategies were in facilitating transfer, and the last question collected data about faculty use of the strategies. The definition of transfer was a component of the introduction so that it was readily available for participants.

In addition in the second section, a question solicited information regarding where faculty learned about EBTS and were then asked to rank the order of each selected item as to its usefulness. Each rank-ordered number could be used more than once. There was a dialogue box allowing participants to list any other resource(s) where they may have learned about the strategies and discuss their usefulness. The narrative questions in this section provided data regarding facilitators or obstacles that affected the participant's ability to use EBTS. Participants were asked about their experience with adding or eliminating curriculum and to what extent they agreed with how similar their teaching strategies were to how they were taught in their own prelicensure program.

Findings

Demographics

The majority (92.1%) of the participants were female with a mean age of 55 years who had been teaching for a mean of 15 years. Most of the participants (89.1%) taught full-time, and more than half (55%) taught in private institutions. The majority (54.3%) taught in a baccalaureate degree program, whereas approximately 32% taught in associate degree programs, and more than half (56.6%) were prepared at the doctoral level. The nursing faculty profile indicated that 28.9% taught only in the classroom environment followed by 27.7% who

taught in the classroom, clinical, laboratory, and simulation environment. There were 40.6% who disagreed that their teaching was similar to how they were taught in their own prelicensure program. The findings regarding where participants learned about EBTS revealed that faculty development programs were the most important (46.2%), followed by formal education program (41.2%), continuing education programs (38.6%), conferences (38.8%), Internet (36.6%), professional journals (33.6%), faculty mentoring (33.6%), and books (12.2%).

Quantitative Analysis

Frequencies were used to examine faculty knowledge around EBTS, beliefs in effectiveness, and faculty use of EBTS. Using a 4-point Likert scale, where 1 = *not at all*, 2 = *to a small degree*, 3 = *to a moderate degree*, and 4 = *to a great degree*, participants were asked to what extent they were knowledgeable about the EBTS. The top five strategies that participants had the greatest degree of knowledge about were reflection (53.4%), simulation (50%), small group work (45.9%), CBL (39.8%), and PBL (39.2%). See Table 1, which displays the frequencies, means, and standard deviations of each strategy.

Participants were asked to rank how effective they believed each of the EBTS were by using a 4-point Likert scale, where 1 = *not at all effective*, 2 = *a little effective*, 3 = *moderately effective*, and 4 = *very effective*. The findings revealed the five top strategies that participants believed were very effective: simulation (61.9%), unfolding case study (49.2%), PBL (48.5%), CBL (43.5%), and reflection 39.1%). See Table 2, which displays the frequencies, means, and standard deviations of each strategy.

Last, using a 4-point Likert scale, where 1 = *never*, 2 = *occasionally*, 3 = *often*, and 4 = *always*, participants were asked to what extent they used each of the EBTS. The findings revealed the five top strategies always used by nursing faculty: reflection (27.8%), simulation (22.4%), small group work (21.8%), CBL (15.8%), and PBL (15.2%). See Table 3, which displays the frequencies, means, and standard deviations of each strategy.

Spearman rank order correlations revealed each strategy had significant correlations with knowledge, belief in effectiveness, and use of the strategies. See Table 4 for the correlations between knowledge, belief in effectiveness, and use of each strategy.

The categories of age, type of program, highest education level, and years teaching along with the categories of knowledge, belief in effectiveness, and use of EBTS were explored using the chi-square test for independence. Of the EBTS, a chi-square test for independence (with Yates Continuity Correction) indicated a significant difference with the belief in effectiveness and interactive computer, $\chi^2(1) = 5.224, p < .05$, indicating that those with a doctorate degree

Table 1
Faculty knowledge

Strategy	1 = Not at all		2 = To a small degree		3 = To a moderate degree		4 = To a great degree		Total			
	n	%	n	%	n	%	n	%	n	%	M	SD
Case-based learning	2	1.5	18	13.5	60	45.1	53	39.8	133	100.0	3.23	0.73
Unfolding case study	7	5.3	20	15.3	57	43.5	47	35.9	131	100.0	3.09	0.84
Problem-based learning	1	0.8	12	9.2	66	50.8	51	39.2	130	100.0	3.28	0.66
Narrative pedagogy	12	9.0	30	22.6	47	35.3	44	33.1	133	100.0	2.92	0.95
Reflection	4	3.0	12	9.0	46	34.6	71	53.4	133	100.0	3.38	0.77
Simulation	0	0.0	16	11.9	51	38.1	67	50.0	134	100.0	3.38	0.69
Cooperative learning: Small group work	0	0.0	17	12.8	55	41.4	61	45.9	133	100.0	3.33	0.69
Cooperative learning: Role play	5	3.7	41	30.6	47	35.1	41	30.6	134	100.0	2.92	0.87
Interactive learning: Interactive videos	9	6.9	35	26.9	50	38.5	36	27.7	130	100.0	2.86	0.90
Interactive learning: Interactive computer	5	3.8	30	22.9	54	41.2	42	32.1	131	100.0	3.01	0.84

Table 2
Belief in effectiveness

Strategy	1 = Not at all effective		2 = A little effective		3 = Moderately effective		4 = Very effective		Total			
	n	%	n	%	n	%	n	%	n	%	M	SD
CBL	1	0.8	9	6.9	64	48.9	57	43.5	131	100.0	3.35	0.64
Unfolding case study	2	1.5	10	7.7	54	41.5	64	49.2	130	100.0	3.38	0.69
PBL	0	0.0	12	9.2	55	42.3	63	48.5	130	100.0	3.39	0.65
Narrative pedagogy	8	6.3	34	27.0	61	48.4	23	18.3	126	100.0	2.78	0.81
Reflection	4	3.0	18	13.5	59	44.4	52	39.1	133	100.0	3.19	0.78
Simulation	0	0.0	3	2.2	48	35.8	83	61.9	134	100.0	3.59	0.53
Cooperative learning: Small group work	1	0.7	14	10.4	73	54.5	46	34.3	134	100.0	3.22	0.65
Cooperative learning: Role play	2	1.5	29	21.8	69	51.9	33	24.8	133	100.0	3.00	0.72
Interactive learning: Interactive videos	4	3.1	26	20.3	72	56.3	26	20.3	128	100.0	2.93	0.72
Interactive learning: Interactive computer	3	2.3	28	21.1	69	51.9	33	24.8	133	100.0	2.99	0.74

believe that the interactive computer is an effective EBTS. No other significant relationships were found.

Qualitative Analysis

To explore the participants' experiences with EBTS, open-ended questions were employed to collect narrative data for content analysis. Rigor is evident through a study's trustworthiness, which include the components of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Credibility was established by meeting with coauthors experienced in qualitative research, and the open-ended questions were analyzed through an iterative review process that involved review of the narrative components of the questions. During the process, analysis of major themes and sub-theme were derived and refined as necessary (Polit & Tatano Beck, 2012). The narrative texts and the population demographics were thoroughly described to allow for applicability to other settings to enhance transferability (Thomas & Magilvy, 2011). A detailed account of the process of the study, such as data collection and participant selection, was used in order to enhance dependability. Once credibility, transferability, and dependability were established, confirmability can occur (Lincoln & Guba, 1985; Thomas & Magilvy, 2011). The analysis process ensured rigor and trustworthiness.

A major theme that emerged was “a culture of support.” When participants described facilitators, the word *support* was often used. A subtheme that emerged was “resources,” where participants identified technology support by means of availability of resources, such as computers, well-equipped classroom and laboratories, technology, and classroom capabilities. Simulation support was identified in the form of a simulation coordinator along with availability of a simulation laboratory. Other facilitators were supportive administrative leadership and support from other faculty. As one participant indicated, “Our administration is very supportive and works hard to

implement the latest simulation and computer programs.” Student issues, such as motivated students and small student groups were also facilitators. Another participant commented, “Small student populations in our program help to facilitate practice-theory knowledge transfer. Smaller group sizes allow for more 1-on-1 interactions and intimate discussions.”

Conversely, a major theme for obstacles was a culture that indicated a “lack of support.” When responding to the question, participants typically used “lack of” to identify obstacles. A subtheme that emerged was the category of time. As one participant stated, “lack of class time, time to read up on new strategies or put together strategies.” This same participant used “lack of support from other faculty, dean or director,” which were obstacles echoed by other participants.

The term *lack of resources* was used when participants identified such things, such as space, supplies, computer access, technology, and simulation. One participant stated, “Lack of space, lack of faculty, lack of supplies.” Others indicated “lack of faculty development opportunities specific to these strategies in nursing.” Lack of student motivation and those who are disengaged and unprepared were also identified as obstacles.

Discussion and Implications for Nursing Education Practice

The findings from this study illustrate strategies nursing faculty are using to facilitate transfer between theory and practice. Results of the study found that the relationship between knowledge about the EBTS, belief in effectiveness, and use of the strategies were significant. The findings suggest that, if nursing faculty had knowledge about the strategies and believed that they were effective, they appeared to use them. The results revealed that the top five strategies used were reflection, simulation, small groups, CBL, and PBL as compared with Brown et al. (2009) who found that case-based, lecture, discussion, and multimedia strategies were used by more than 70%

Table 3
Use of teaching strategies

Strategy	1 = Never		2 = Occasionally		3 = Often		4 = Always		Total			
	n	%	n	%	n	%	n	%	n	%	M	SD
CBL	10	7.5	37	27.8	65	48.9	21	15.8	133	100.0	2.72	0.81
Unfolding case study	19	14.6	35	26.9	64	49.2	12	9.2	130	100.0	2.53	0.85
PBL	10	7.6	32	24.2	70	53.0	20	15.2	132	100.0	2.75	0.80
Narrative pedagogy	27	20.6	42	32.1	42	32.1	19	14.5	130	100.0	2.39	0.98
Reflection	11	8.3	28	21.1	57	42.9	37	27.8	133	100.0	2.90	0.90
Simulation	18	13.4	38	28.4	48	35.8	30	22.4	134	100.0	2.67	0.97
Cooperative learning: Small group work	9	6.8	41	30.8	54	40.6	29	21.8	133	100.0	2.77	0.86
Cooperative learning: Role play	31	23.1	65	48.5	29	21.6	9	6.7	134	100.0	2.11	0.84
Interactive learning: Interactive videos	22	16.7	57	43.2	42	31.8	11	8.3	132	100.0	2.31	0.84
Interactive learning: Interactive computer	21	15.7	52	38.8	50	37.3	11	8.2	134	100.0	2.38	0.84

Table 4

Spearman rank order correlations table between knowledge, effectiveness, and use of EBTS

EBTS	Knowledge and effectiveness of strategy (rho)	Knowledge of and use of strategy (rho)	Effectiveness and use of strategy (rho)
CBL	.415**	.473**	.377*
Unfolding case study	.458**	.416**	.328**
PBL	.407**	.396**	.347**
Narrative pedagogy	.427**	.603**	.503**
Reflection	.387**	.346**	.461**
Simulation	.257**	.430**	.280**
Cooperative learning: Small group	.298**	.382**	.374**
Cooperative learning: Role play	.426**	.372**	.342**
Interactive learning: Interactive videos	.387**	.428**	.266**
Interactive learning: Interactive computer	.489**	.399**	.240**

** Correlation is significant at the $p = .01$ level (two tailed).

of the participants. Their findings also revealed that CBL, PBL, narrative/storytelling, reflection, and cooperative learning were several of the top 10 teaching strategies most helpful to facilitate student learning. The findings from this current study appear to support data in the literature, which suggests that integrative, varied, and active learning strategies are used to engage the student in the learning process (Booth et al., 2017; Jansen, 2015; Staykova et al., 2017).

Furthermore, the findings of the current study suggest that facilitators and obstacles can influence the use of EBTS. Results of the study were consistent with the literature that found obstacles to be lack of faculty time, resources, large class sizes, and administrative and peer support (Patterson & Klein, 2012; Shindell, 2011). Whereas large class sizes was an obstacle, having small groups or class sizes were identified as facilitators, which suggests that having small groups of students enhances the ability to use EBTS.

In similar findings to Hebenstreit (2012), in this study, support from administration, other faculty, and resources were identified as facilitators to using the strategies. If one feels supported within the organization whether it is relationships or resources, along with encouragement from leadership, then they may feel empowered, advocate for and use innovative, integrative teaching strategies. As leaders within their academic programs, nursing administrators, having insight of their faculty strengths, should develop a mentoring process. The findings from this study suggest that years teaching was not significant. Therefore, mentoring would allow for partnering novice faculty with those that are experienced with using the strategies, not necessarily with faculty who have the most years teaching in nursing education. It is crucial to foster a culture of support where nursing faculty have the knowledge and resources for successful implementation of the strategies.

This study was limited in that it was a convenience sample that used only public e-mail addresses from which there could be participant response differences from those with public and nonpublic e-mail addresses. The results reflected nursing faculty in NYS; therefore, the results may not be generalizable. However, the findings contribute to the limited nursing science relevant to what faculty know about and to what extent they use strategies that facilitate transfer.

Conclusion

The results from this study illustrate faculty knowledge around EBTS, faculty use, and beliefs in effectiveness while highlighting facilitators and obstacles. Nursing education is foundational in teaching nurses for future practice. Prospective educators need to be schooled in new and innovative teaching strategies, such as pedagogies of integration (Benner et al., 2010; Nielson, 2016). Current nursing education calls for teaching that emphasizes active, integrative strategies. It is essential that nurse educators have knowledge about and are consistent with using strategies that facilitate transfer between

theory and practice based on research. Nursing faculty play a pivotal role in educating future nurses, and nursing education has an intrinsic obligation to meet the challenges of a complex health care environment in contemporary times.

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