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Increasing Faculty Knowledge of Competency-Based Education: A Quality Improvement Project

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Abstract

Background: The nursing academic-to-practice knowledge gap creates systems-based and patient outcomes issues. The changing demands of healthcare require the advancement of the discipline of nursing through the improvement of nursing education. The American Association of Colleges of Nursing (AACN) requires all nursing programs to implement Competency-Based Education (CBE) evaluations and assessments into existing nursing curricula to respond to changing healthcare demands. The aim of this project was to improve the knowledge of nursing educators regarding the use of CBE at a mid-sized university in the southeast.

Methods: The Diffusion of Innovation Theory was used as a framework for this project. Nursing faculty knowledge and attitudes regarding CBE were assessed using convergent mixed-methods surveys at three different phases: pre-, mid-, and post-training.

Intervention: A lecture-based presentation was given to nursing faculty which was designed from the AACN *Essentials* and aimed to increase the knowledge level of CBE by providing introductory content. This lecture, in addition to a series of educational meetings, marked the initial training period of CBE for undergraduate nursing faculty.

Results: The mean level of knowledge regarding CBE increased from 2.75 in the pre-CBE training group to 3.62 in the post-CBE training group (on a 5-point scale). The mean rating of participants who felt they understood the expectations of incorporating CBE into their courses increased from 2.80 in the pre-CBE training group to 3.62 in the post-CBE training group (on a 5-point scale). One of the most frequently reported barriers to implementing CBE during training phases was a *lack of understanding*. One of the most frequently suggested methods for future training regarding CBE was *expert consultants*. Participants reported that the educational presentation provided a *basic representation* regarding CBE.

Conclusions: The introductory presentation regarding CBE helped to increase the self-reported knowledge level of participants. However, it is important to note that additional faculty development regarding CBE was ongoing throughout this project. Future research regarding implementing CBE into nursing education should continue to measure nursing faculty knowledge and seek feedback to improve the transition of curriculum change.

　　　Keywords: Competency-Based Education, nursing education, nursing faculty, curriculum change

Increasing Faculty Knowledge of Competency-Based Education: A Quality Improvement

Project

There is a widening gap between the knowledge gained during nursing school and the knowledge required for nursing practice. As healthcare demands continue to change, so will the needs of the nursing profession. The current knowledge gained by students in nursing school leaves a gap between the knowledge required for nursing practice and may result in New Graduate Registered Nurses (NGRNs) who are underprepared for nursing practice. Competency-based education (CBE) may be necessary to address the knowledge gap while addressing the nursing profession's ongoing needs. Using the Performance Based Development System (PBDS) from the 2016-2020 assessment, Kavanaugh and Sharpnack (2021) gathered data from over 5,000 New Graduate Registered Nurses (NGRNs). The authors showed that only 14% of NGRNs met entry-level competencies (Kavanaugh & Sharpnack, 2021). Additionally, the National Council Licensure Examination (NCLEX) national average pass rates for baccalaureate-prepared nurses decreased from 91% in 2019 to 82% in 2022 (Seegert, 2023). NGRNs who are underprepared for practice affect system and patient outcomes.

In response to the issues of underprepared NGRNs and the ongoing healthcare needs, the American Association of Colleges of Nursing (AACN) published the *Essentials* for universities to implement into nursing programs using CBE. In the *Essentials*, the AACN emphasizes the need to change the nursing curriculum to address the changing needs within healthcare, such as diversity, equity, and inclusion (DEI), improving health promotion and disease prevention, advancements in technology, and improving academic-practice partnerships (AACN, 2021). The AACN explains that there is a greater emphasis on outcome-driven education and assessment, and CBE is the necessary tool to implement outcome-driven education in nursing (AACN,

2021). The AACN now requires all nursing programs to implement CBE-based assessment and evaluation into the existing nursing curricula (AACN, 2021). The purpose of this project was to improve the knowledge of nursing educators regarding the use of CBE at a Christian university in the southeast.

Problem Description

Poor patient outcomes are one of the greater impacts of underprepared NGRNs. Kavanagh and Szweda (2017) analyzed PBDS assessment survey data from 2010-2015 and found that 23% of NGRNs could not recognize a change in a patient's condition or an emergent clinical situation. This issue of NGRNs' inability to recognize changing patient conditions is exemplified by a qualitative study where NGRNs described the difficulty in recognizing mistakes that may affect patients, like identifying medications and medication interactions (Cope et al., 2019). Additionally, the significant percentage of NGRNs who quit within one year of work may contribute to the ongoing nursing shortage. In 2021, over 100,000 Registered Nurses (RNs) left the profession, which is the most significant decrease in RNs in almost 40 years (Auerbach et al., 2022). This level of turnover contributes to unsafe nurse-to-patient ratios, which are associated with an increased risk of patient mortality (Lasater et al., 2021). One study that examined over 200,000 Medicare patients admitted to 87 hospitals found that patients' risk of mortality increased by 16% each time their nurse took on an additional patient assignment (Lasater et al., 2021). Hospitals and academic institutions must address the academic-to-practice gap to meet the required healthcare standards.

Traditional nursing curriculum standards required proof of course content being introduced to students. Nursing education is transitioning, such that nursing students must now demonstrate knowledge and skills of course content in a more deliberate manner compared to

previous requirements of a traditional curriculum. This transition is necessary because research has shown that traditional curriculum methods may impact the readiness of NGRNs. In the 2021 New Graduate Survey, the perceptions of stress in NGRNs were significantly lower in those who felt their undergraduate program sufficiently prepared them for practice than in those who felt their undergraduate program did not adequately prepare them for practice (Feeg et al., 2022). This stress felt by underprepared NGRNs may contribute to systems-based outcomes like high NGRN turnover. The 2023 National Health Care Retention and RN Staffing Report found that over 32% of registered nurses (RNs) quit with less than one year of experience (NSI Nursing Solutions, 2023). Consequently, hospitals can lose up to $10 million annually due to turnover costs (NSI Nursing Solutions, 2023). Specifically, over $52,000 is lost in turnover costs when one RN decides to leave the profession (NSI Nursing Solutions, 2023).

Responsibility for underprepared NGRNs is that of both the hospital system and academia. The National Council of State Boards of Nursing (NCSBN) developed a Transition to Practice (TTP) model program that hospital systems use to bridge the academic-to-practice gap (Spector et al., 2015). One study of 105 hospitals that used the TTP program found that NGRNs had fewer errors, less stress, and increased competence (Spector et al., 2015). Regarding their responsibility on the academic front, the AACN has published frameworks of competencies called the *Essentials* that advance nursing as a profession to meet the current standard of healthcare (AACN, 2021). The *Essentials* serve as a framework on which nursing educational institutions identify curriculum content and student competencies for undergraduate and graduate nursing programs (AACN, 2021). Nurse educators use CBE to implement this curriculum content, aiming to bridge the academic-to-practice gap by establishing expectations for all nursing graduates (AACN, 2021).

Available Knowledge

History and Purpose of CBE

The AACN defines CBE as a system with active learning being centered around students' ability to demonstrate mastery of competencies as they progress through the curriculum (AACN, 2023). Historically, CBE has been used as a framework for curriculum since the 1970s, initially to ensure that teachers were mastering competencies (Lewis et al., 2022; Nodine, 2016). Studies now show that CBE is gaining traction as other universities seek innovative ways to support students with various levels of knowledge and financial backgrounds (Hossler & James, 2021; Lewis et al., 2022). Some studies show that CBE has transformed the structure of traditional curricula because students' progress through programs by demonstrating mastery of competencies and not merely time spent each semester (Lewis et al., 2022; Nodine, 2016). Consequentially, CBE can be implemented at various levels: solely as CBE-based evaluations, CBE-based courses, and even university-wide CBE-based programs (Lewis et al., 2022). This allows flexibility for non-traditional students in university programs and enables the student to control the pace of their progression through a program (Lewis et al., 2022). The implementation of CBE in nursing education is unique because of the addition of the AACN *Essentials* as a guide for all associated nursing education institutions. It is important to note that the AACN does not require nursing programs to change to a time-variable program in which students would progress at their own pace through the program (AACN, 2023).

CBE-Based Evaluations

It is essential to understand CBE-based evaluations because CBE is inherently an outcomes-based framework (AACN, 2023). CBE-based evaluations and assessments are used in nursing curricula as an opportunity for nursing students to demonstrate the knowledge, skills,

and attitudes required to demonstrate competency mastery (AACN, 2023; AACN, 2021). CBE-based evaluations consist of multiple types of assessments, like self-reflection, feedback, formative and summative assessments, and direct observation of skills (AACN, 2023). Nursing programs map the existing curriculum to 45 competencies within ten domains outlined in the *Essentials* (AACN, 2023; AACN, 2021). Several studies show that implementing CBE-based curricula creates the need to revise or develop existing courses to incorporate active learning so that CBE-based evaluations match the required competency (Galura & Warshawsky, 2022; Wolf, 2022). Students engage in active learning to be successful with CBE-based evaluations because the evaluations test more than a basic knowledge level (AACN, 2021). Additionally, several studies show that CBE-based evaluations decrease implicit and explicit bias through the assessments' rigorous and consistent designs (Gravina, 2022; Lewis et al., 2022; Hossler & James, 2021).

Studies show that in CBE-based assessments, students are asked to demonstrate the ability to self-reflect, judge, and reason with the knowledge they have learned across multiple contexts (AACN, 2021; Galura & Warshawsky, 2022; Giddens et al., 2022; Oermann, 2023). Two studies show that demonstrating knowledge across multiple contexts throughout the curriculum is vital because competencies are not mastered with only one course or exam (Giddens & Mansfield, 2023; Oermann, 2023). Additionally, many students track their achievement of competencies using e-portfolios (Giddens & Mansfield, 2023). E-portfolios are helpful for the transition to practice because employers of NGRNs can review specific competencies for areas of improvement (Giddens & Mansfield, 2023). Early identification of those particular competencies that warrant improvement may allow NGRNs to have an individualized orientation, which may help improve the transition to practice.

Integration of CBE

The experience of integrating CBE into an existing nursing curriculum is a complex task that requires multiple steps and effort from all faculty involved in the process (Echols et al., 2018; Galura & Warshawsky, 2022; Gravina, 2017; Lewis et al., 2022). The AACN emphasizes that a shared understanding of CBE among nursing faculty is the key to successfully implementing CBE into a nursing program (AACN, 2023). Several studies show that consistent communication with faculty members during the implementation of a curriculum change helps faculty feel empowered throughout the transition (Bank et al., 2019; Barnes et al., 2023; Galea et al., 2015; Quearry et al., 2019; Velthius et al., 2018). In addition, some studies show that creating opportunities for informal communication and frequent feedback between faculty and leadership are essential to successfully implementing curriculum change (Bank et al., 2019; Galea et al., 2015; Joyner, 2016). Specifically, using communication methods like meetings and surveys is helpful to identify areas of concern for faculty (Durham et al., 2023). On the other hand, overcommunication may create a barrier to faculty transition (Barnes et al., 2023; Chowthi-Williams et al., 2016; Velthius et al., 2018; Wilhelm et al., 2020). An additional barrier to implementation may be non-individualized communication, with three studies showing that communicating with larger groups of staff like faculty, committees, and board members may lead to differing levels of knowledge, which leads to varying levels of implementation (Barnes et al., 2023; Velthius et al., 2018; Wilhelm et al., 2020). The complexity of integrating CBE-based evaluations into nursing programs creates the need for effective communication with nursing faculty to facilitate change.

Rationale

The Diffusion of Innovation (DOI) theory explains how an idea is adopted by a specific population over time (LaMorte, 2022; Rogers, 2003) (See Figure 1). The DOI theory was created by Everett Rogers in 1962 and is characterized as a social science theory (LaMorte, 2022; Rogers, 2003). Ideas are not spread through a population all at once; instead, there is a five-stage adoption process: awareness, interest, decision, trial, and adoption (Kaminski, 2011; LaMorte, 2022; Rogers, 2003). In the awareness stage, one learns of the proposed idea but does not have all the knowledge (Kaminski, 2011; LaMorte, 2022; Rogers, 2003). In the interest stage, one becomes interested in the idea or innovation and seeks the necessary knowledge (Kaminski, 2011; LaMorte, 2022; Rogers, 2003). In the decision stage, one decides whether to use the idea or innovation (Kaminski, 2011; LaMorte, 2022; Rogers, 2003). Finally, in the trial stage, one uses the idea or innovation, which leads to the adoption stage, where one decides to continue to use the idea or innovation (Kaminski, 2011; LaMorte, 2022; Rogers, 2003).

The process of adoption of an idea or innovation occurs at various times within a specific population. There are five groups of adopters within a population: innovators, early adopters, early majority, late majority, and laggards (Kaminski, 2011; LaMorte, 2022; Rogers, 2003). Rogers created a theoretical model to display the proportions of people in each category of adopters and show the process of adopting an idea over time (Rogers, 2003) (see Figure 1). In addition, five factors influence the adoption of an idea or innovation: relative advantage, compatibility, complexity, trialability, and observability (LaMorte, 2022; Rogers, 2003). These five factors are ranked in various levels of importance for each group of adopters (LaMorte, 2022; Rogers, 2003). This theory is used to show that change interventions should not be used to inspire people to become early adopters or innovators (Kaminski, 2011; Rogers, 2003). Instead, interventions can be tailored to target each group of adopters (Kaminski, 2011; Rogers, 2003).

The DOI theory was chosen for this project because it served as a framework for the intervention. The idea that was being adopted was the concept of Competency-Based Education (CBE). The specific population was the undergraduate faculty members, and the intervention targeted the awareness stage of the adoption process because the faculty members had varying knowledge regarding CBE. The DOI theory in this project helped explain the phenomena of the undergraduate nursing faculty's process of adopting CBE into the curriculum. During the project's planning phase, discussions with project stakeholders revealed that the undergraduate nursing faculty had various levels of awareness of CBE. The intervention was then created using the DOI theory as a framework to focus on the awareness stage in the adoption process by presenting the definition of CBE, why CBE is needed in the curriculum, and how the faculty will use CBE in their courses. These concepts of CBE within the presentation also showed several of the influencing factors within the DOI theory: relative advantage, complexity, and trialability. After increasing the awareness of CBE, the DOI theory was used to explain how the post-intervention survey assessed whether the faculty had implemented CBE into their courses. This indicates how many faculty members are now characterized as innovators, early adopters, early majority, late majority, or laggards. Additionally, the DOI theory was used to assess the faculty's level of awareness regarding CBE before and after the intervention. Identifying the amount of faculty in the five different adopter groups may help create more targeted interventions to increase the adoption rate of CBE.

Specific Aims

This project aimed to increase the knowledge level among undergraduate nursing faculty regarding CBE and its implementation into the nursing curriculum. Communication with the chair of the curriculum committee led to the development of a strategy involving providing

faculty with an introductory educational presentation regarding CBE that best served to increase both knowledge and awareness. Additionally, communication with the chair of the curriculum committee led to measuring faculty feedback on the ongoing education regarding CBE to identify areas of improvement in faculty training. Increased knowledge of CBE and positive experiences of curriculum transition will help close the gap between the knowledge required by the nursing school and the knowledge required to be a registered nurse.

Methods

Context

This project used a convergent mixed-methods design to explore the undergraduate nursing faculty's level of knowledge regarding Competency-Based Education (CBE). The setting of the intervention was within a private university during a required undergraduate nursing faculty development training program regarding the implementation of CBE. The current curriculum in the undergraduate nursing program is the Concept-Based Curriculum (CBC). A total of 41 undergraduate nursing faculty were expected to participate.

Intervention

The intervention was a 20-minute lecture-based presentation regarding how the American Association of Colleges of Nursing (AACN) defines CBE, the reasoning behind the AACN's decision to implement CBE into all nursing programs, and how CBE-based evaluations are designed and used. To ensure the validity of the intervention, the lecture's content regarding the definition of CBE and the expectations of the AACN were paraphrased from the AACN *Essentials* (AACN, 2021). Additionally, the lecture included statistics regarding the academic-to-practice gap in nursing and the healthcare issues described in the *Essentials* that prompted the need for curriculum change. Examples of curriculum mapping templates were shared from the

AACN's *Guiding Principles for Competency-Based Education and Assessment,* and the

presenter demonstrated the mapping of a current undergraduate nursing course's learning and

assessment activities to the matching competencies and domains of CBE.

Study of the Intervention

To assess the baseline level of knowledge regarding CBE in undergraduate nursing

faculty, a pre-intervention survey was distributed to all undergraduate nursing faculty 48 hours

before the presentation. The survey consisted of multiple-choice and open-ended questions

regarding general demographic information, years of experience, and how much course content

was skill or didactic based. It also contained six Likert-scale style questions regarding baseline

knowledge of CBE and one narrative question regarding facilitators and barriers to implementing

CBE (See Appendix). The pre-intervention Qualtrics survey was distributed to the participants

by the associate dean of nursing. A Qualtrics based program evaluation regarding the quality of

the presentation was distributed to faculty immediately after the conclusion of the intervention.

In addition, a mid-point training Qualtrics survey regarding the implementation status of CBE

was sent to all undergraduate nursing faculty by the chair of the undergraduate curriculum

committee. This mid-point survey consisted of three questions regarding facilitators and barriers

to implementing CBE, how much training in CBE the faculty have completed on their own, and

what additional training in CBE the faculty were interested in. The undergraduate nursing faculty

completed the required CBE training in mid-November. A post-intervention Qualtrics survey was

sent to the faculty by the associate dean of nursing after completing the training. Please see

Appendix for the surveys.

Measures

The outcome measure of this project was the faculty member's self-reported level of knowledge regarding CBE. The process measure of this project was the faculty member's self-reported level of understanding of expectations to implement CBE in their courses. The balancing measure of this project was the time spent by faculty learning CBE. The purpose of this project was to improve faculty knowledge of CBE by establishing a baseline level of understanding of CBE among undergraduate nursing faculty. Therefore, measuring the level of knowledge regarding CBE in faculty revealed that faculty are in various stages of adopting the new concept. In addition to the presentation, the faculty had ongoing education regarding CBE provided by the curriculum committee and evaluated this training through the surveys. Methods that ensured data accuracy included providing enough time for faculty to complete the surveys. Faculty were allowed to complete the survey 48 hours in advance. For the immediate program evaluation, faculty were allowed to answer up to 24 hours after the presentation. Faculty were also given 24 hours to complete the mid-point training survey. For the post-intervention survey, faculty were given one week to complete the survey.

Analysis

Quantitative data was analyzed using descriptive statistics in Microsoft Excel. For the Likert-scale questions, each response was assigned one through five so that the mean was calculated from each question. The differences between means of the Likert-Scale style questions were compared between the pre-and post-intervention surveys. Additionally, descriptive statistics were used to analyze the responses to the demographic information and the multiple-choice style questions. The qualitative data from the open-ended and narrative-style questions was analyzed using line-by-line open coding to determine themes. All coding was done with a project supervisor who has qualitative research experience. A mixed-methods convergent design was

implemented to compare quantitative and qualitative findings. To analyze confounding variables like time, the responses of the immediate program evaluation survey and the post-intervention survey were compared using descriptive statistics.

Ethical Considerations

Before the pre-intervention survey, participants were assured that survey responses would be kept anonymous. In addition, de-identifiers were used in data analysis. Researcher bias was avoided by distributing the program evaluation survey after the researcher left the presentation room. Participant data was stored on a locked, password and fingerprint-protected computer. A local Institutional Review Board approved a formal ethical evaluation for this quality improvement project with the IRB ID: 1447.

Results

Data was collected from participants undergoing introductory faculty training regarding Competency-Based Education (CBE) that started in May 2023 and ended in November 2023. Participant data was collected between May 2023 and November 2023 in three phases: before the first CBE educational session (May 2023), at the mid-point of the training period (September 2023), and two weeks after the final introductory training session (November 2023). The faculty underwent additional ongoing training regarding CBE throughout the duration of this project. The approximate number of faculty that attended the CBE educational session was 41. The total number of participants who accessed the pre-CBE training survey was 31. The total number of participants who accessed the mid-point CBE training survey was 17. The total number of participants who accessed the post-CBE training survey was 27.

Quantitative Results

In the pre-CBE group, demographic information included age, gender, race, academic rank, the number of years of teaching nursing, and how much of their course content was didactic or skill-based (Table 1). Of those who responded, the most frequently reported age range was 30-40 years ($n = 7$) and 41-50 years ($n = 7$), all were female ($n = 25$), and most were Caucasian ($n = 25$, 88.00%). When asked to report how much of their course content was didactic and skill-based, the average of the respondents ($n = 21$) reported that 53.19% of their course content was didactic ($SD = 36.96$) and 52.52% of their course content was skill-based ($SD = 37.14$). A question identifying the number of years participants had been teaching at the institution in question was not used due to a technical error in questionnaire implementation.

The outcome measure of this project was the self-reported level of knowledge regarding CBE among participants. Summary statistics of the results of the five-point Likert-scale questions in the pre-CBE training survey are displayed in Table 2. The mean rating of participants who felt they had sufficient knowledge regarding CBE to successfully implement it into their courses was 2.75 ($SD = 1.22$) on a five-point scale. The process measure of this project was the self-reported level of understanding of expectations to implement CBE into their courses. The mean rating of participants who felt they understood the expectations of incorporating CBE into their courses was 2.80 ($SD = 1.50$) on a five-point scale.

Summary statistics of the mid-point CBE training survey are displayed in Table 3. When asked to indicate how much additional training of CBE was completed individually, 57.14% ($n = 8$) of respondents answered, "Very little", 28.57% ($n = 4$) of the respondents answered, "A moderate amount", 14.29% ($n = 2$) of the respondents answered, "None", and none of the participants answered, "A lot".

Summary statistics of the post-CBE training survey are displayed in Table 4. The mean rating of participants who felt they had sufficient knowledge regarding CBE to successfully implement it into their courses was 3.62 (SD = 1.05) on a five-point scale (n = 21). The mean rating of participants who felt they understood the expectations of incorporating CBE into their courses was 3.67 (SD = 1.17) on a five-point scale (n = 21). The mean rating of participants who felt they had received sufficient communication from the nursing administration regarding implementing CBE was 3.30 (SD = 1.10) on a five-point scale (n = 20). The mean rating of participants who felt they had received sufficient faculty training about CBE was 2.85 (SD = 1.24) on a five-point scale (n = 20). When asked if participants had successfully implemented CBE into their courses, 38.89% (n = 7) marked yes, and 61.11% (n = 18) marked no (see Table 5).

Qualitative Results

One narrative question was included in the pre-CBE training survey that asked respondents to list any potential barriers or facilitators to incorporating CBE into their courses. Of those who accessed the pre-CBE training survey, 13 (41.9%) participants completed the narrative question (N = 31). Two narrative questions were included in the mid-point CBE training survey. The first asked to list any barriers or facilitators the respondents had encountered while implementing CBE into their courses, and the second narrative question asked to list any additional training that the respondents would like regarding CBE. Out of those who accessed the mid-point CBE training survey, 11 (64.7%) of the participants completed the first narrative question, and 10 (58.8%) of the participants completed the second narrative question (N = 17). Five narrative questions were included in the post-CBE training survey: the first was an open-ended question for respondents to explain their answer to a Likert-scale question regarding

sufficient communication during the implementation of CBE, the second was an open-ended question for respondents to explain their answer to a Likert-scale question regarding sufficient faculty training of CBE, the third was a narrative question asking respondents to describe barriers or facilitators they encountered regarding implementing CBE, the fourth was a narrative question asking for respondents to list any additional training they would like regarding CBE, and the fifth was a narrative question that asked respondents to describe how the introductory presentation that was given at the start of the CBE training helped or not, in providing information regarding CBE. Out of those who accessed the post-CBE training survey, 12 (44.4%) participants answered question one, 11 (40.7%) participants answered question two, 15 (55.5%) participants answered question three, 11 (40.7%) participants answered question four, and 9 (33.3%) participants answered question five ($N = 27$).

Data analysis was completed in three sessions of line-by-line coding with an expert in qualitative research. Open, line-by-line, and incident-to-incident coding were used with the methods of Corbin and Strauss (2015). Meaningful codes with their properties were named by the frequency and relevance of the codes and categorized into the three phases of CBE training: Pre-CBE training, mid-point CBE training, and post-CBE training (Table 6, Table 7, Table 8, Table 9). Audit trails were completed for each survey (Table 10, Table 11, Table 12).

Pre-CBE Training

When asked to describe potential facilitators or barriers to implementing CBE into their courses, a frequently described barrier was the *lack of* something: *Lack of understanding (expectations), lack of direction, lack of knowledge,* and *lack of training*. Characteristics of the responses that contributed to a lack of understanding were *limited leadership assistance* and *vague and overwhelming language*. Additionally, "change is hard", and *time* was frequently

described in responses as barriers. *Mapping challenges* were described as potential barriers and were also described as barriers throughout each phase of this study. The *lack of direction by the AACN* was identified as both a potential barrier and facilitator to implementing CBE, the barrier being *lack of guidance* and the facilitator being the chance to be *innovative and creative* with implementing CBE. *Workshops* were mentioned as a potential facilitator and several times throughout each phase of this study as a source of additional training. Other facilitators of implementing CBE stated "It's a major change, and a good one", and *expert faculty resources*.

Mid-Point CBE Training

When asked to describe barriers or facilitators that participants have encountered regarding implementing CBE into their courses, no facilitators were listed by the respondents. A frequently described barrier was a *lack of understanding*. *Mapping challenges* and *accreditation challenges* were also mentioned as barriers to implementing CBE, regarding curriculum mapping current course content to meet the standards of the CBE curriculum set by the AACN. *Mapping challenges* were also listed as a barrier in the pre-and post-CBE training surveys. *CBE CE overwhelming* was mentioned as a barrier, which showed that continuing education regarding CBE is overwhelming. *CBE CE overwhelming* supported the pre-CBE training survey barrier of *overwhelming language*. The word overwhelming was frequently used to describe the barriers.

When participants were asked to describe any additional training they would like regarding CBE, *anything* was frequently mentioned regarding the type of CBE training. *Information on CBE implementation* and *robust integration explanation* were frequently described and similar in that both were asking for information on the integration and implementation of CBE. *Small group planning* and *face-to-face seminars* were mentioned in

both the mid-point CBE training survey and the post-CBE training survey responses regarding additional training.

Post-CBE Training

When asked to explain their answer to the previous Likert-scale question of whether participants received sufficient communication regarding CBE implementation, both *sufficient communication* and *insufficient communication* were frequently described. One participant described how the communication they received was *better than past communication,* which showed a change in communication over time. Additionally, both *need clearer expectations* and *clear information* were described, which showed that some participants felt there was a lack of clear expectations. However, others felt that the information was clear.

When asked to explain their answer to the previous Likert-scale question regarding whether participants received sufficient faculty training regarding CBE, *training not helpful* was frequently described. *Sufficient with mentor* shows that training was only sufficient with the help of a mentor. One response, *need for more training with new faculty*, identified a population within the faculty to provide more training. The need for more training was frequently described, with *additional information needed* and *need more faculty development*.

When asked to describe any facilitators or barriers participants encountered regarding implementing CBE, barriers that were frequently described were *time* and *no clear expectations*. Additionally, *more direction needed* and *lack of clear understanding among colleagues* was described and supported the barrier of *no clear expectations*. *CBE big and complicated* supported the barriers of *overwhelming language*, mentioned in both the pre-and mid-point CBE training surveys. The described facilitators were *leadership support*, *new technology, clear communication,* and *understanding of nursing organization publications*.

When asked to describe any additional training participants would like regarding CBE, frequently described responses included *expert consultant*. Additionally, *help from expert in-house faculty* supported this response. *Course mapping* was described as an area of additional training, which supported the mention of *mapping challenges* in both the pre-and mid-point CBE training survey. Additionally, the responses of *tangible examples* and *exemplar of CBE threaded through course* supported the need for training regarding *course mapping*. *Collaboration* and *need for workgroups* were also mentioned, which supported the need for collaborative training. Specific training regarding *implementation of AACN requirements* was also mentioned.

When asked how the presentation helped or not to provide information about incorporating CBE into courses, *vaguely remember* was mentioned. Additionally, the survey question did not include context to the specific presentation that was given. However, *set the stage for understanding, basic representation, introductory in nature,* and *provided some expectations* were described and supported the overall purpose of the intervention. Additionally, the importance of the intervention was included with responses like *needed, identified what is missing, appreciated,* and *helpful*.

Discussion

Summary

The success of this project is exemplified through the quantitative results of the outcome and process measures in the surveys. Additionally, the qualitative results support both the success of the project and identify areas of improvement. At the beginning of the five-month initial Competency-Based Education (CBE) training for undergraduate faculty members, the mean rating of the self-reported level of sufficient knowledge of CBE to successfully implement into courses was 2.75 (SD = 1.22) on a five-point scale. At the end of the five months of CBE

training, the mean rating of sufficient knowledge regarding CBE to successfully implement into courses increased to 3.62 (SD = 1.05) on a five-point scale. Additionally, awareness regarding CBE increased, represented by the level of understanding of why the American Association of Colleges of Nursing requires CBE in nursing curricula. The mean level of awareness in the pre-CBE training survey was 3.90 (SD = 1.34) on a five-point scale and 4.67 (SD = 0.47) on a five-point scale in the post-CBE training survey. Measuring knowledge and awareness represented the project's specific aim: to improve knowledge and awareness regarding CBE for undergraduate nursing faculty.

Additionally, 38.89% of participants reported successfully implementing CBE into their courses in the post-CBE training survey, while 61.11% reported they were unsuccessful in implementing CBE into their courses. The outcome of successful implementation helped support using the DOI theory to identify participants within the five groups of innovators, early adopters, early majority, late majority, or laggards. Although there is no specific identification of the five groups of innovators in this project, it is helpful to know that most participants did not yet implement CBE into their courses so that interventions can be targeted towards helping to increase the implementation of CBE. Measuring the knowledge and awareness outcomes supported the use of the DOI Theory for the framework of this project because the theory was used to frame the introductory educational session regarding CBE to target the awareness stage of participants.

Other key findings were identified in the qualitative results of the project. In each survey of the project, participants were asked to list facilitators and barriers to implementing CBE into their courses. In the pre-and mid-CBE training surveys, one of the most frequently reported barriers was a *lack of understanding*. However, by the post-CBE training survey, *lack of*

understanding was less frequently reported. This difference in responses over time supported the project's aim to improve knowledge and awareness regarding CBE. Additionally, the strengths of this project included rigorous qualitative methodology during qualitative data analysis and the fact that this project was unique in targeting nursing faculty to improve the process of CBE implementation. The curriculum committee and nursing leadership can use the results of this project to develop improved faculty development opportunities for CBE implementation.

Interpretation

After faculty were presented with the introductory CBE educational presentation, the self-reported level of knowledge increased (see Table 4). Additionally, the self-reported level of understanding of expectations regarding implementing CBE into courses increased after the CBE education presentation from 2.80 ($SD = 1.22$, $N = 20$) to 3.67 ($SD = 1.17$, $N = 21$). The increase in the level of knowledge and understanding of expectations was relevant because the CBE education presentation aimed to improve faculty knowledge regarding CBE by providing information about the background of CBE, why CBE is necessary, and examples of how faculty will use CBE in their courses. However, it is important to note that this project's educational presentation was not the sole education for nursing faculty regarding CBE. Faculty had various ongoing sources of CBE education provided by the curriculum committee. In the post-CBE training survey, participants were asked to describe how the CBE education presentation helped provide information regarding implementing CBE into courses. Responses were described as *set the stage for understanding*, *basic representation*, *introductory in nature*, and *provided some expectations*. These responses were evidence of the achievement of the goals of the CBE educational presentation. However, another participant suggested that they *vaguely remember* the presentation. This comment may speak to the timing regarding the presentation and the post-

CBE training survey. The presentation was provided in May 2023, while the post-CBE training survey was distributed in November 2023.

As discussed earlier, sufficient communication and training by leadership is critical to a successful curriculum transition. Participants reported that the mean level of sufficient communication regarding CBE implementation was 3.30 ($SD = 1.10$) on a five-point scale ($N = 20$) in the post-CBE training survey. Qualitative responses helped explain the quantitative responses, with participants describing both *sufficient* and *insufficient communication*. One response noted the improvement from previous communication: "I believe our undergraduate chair, curriculum committee, and administrators has done well in communication of CBE in comparison to other changes that have occurred throughout my time at [redacted]." Participants reported that their perceptions of what was a sufficient level of training regarding CBE were 2.85 ($SD = 1.24$) on a five-point scale ($N = 20$) in the post-CBE training survey. Qualitative responses helped explain the quantitative responses, with participants frequently describing that *training has not been helpful*, *need for more training for new faculty*, *additional information needed*, and *need more faculty development*. However, *sufficient training with mentor* was also mentioned. The need for improved training and communication aligned with findings from Barnes et al. (2023), where authors found the need for full faculty involvement and leadership support to successfully implement CBE at Indiana University's nursing program.

This project also measured participants' level of self-teaching regarding understanding CBE and the level of relying on peer communication to understand CBE. When faculty members were asked about their own efforts to improve their level of knowledge and understanding through various individual efforts, scores increased from 3.75 ($SD = 0.99$, $N = 20$) to 4.33 ($SD = 0.84$, $N = 21$). When asked about how much of their understanding regarding CBE

implementation was provided through peer communication, scores increased from 3.75 (*SD* =
1.26, *N* = 20) to 3.86 (*SD* = 1.32, *N* = 21). The qualitative responses in the pre-CBE training
survey supported these quantitative findings. The *lack of direction* and *limited leadership
assistance* were described as barriers to implementing CBE into courses. In the post-CBE
training survey, *no clear expectations* and a *lack of clear understanding among colleagues* were
described. Despite the increased level of individual exploration to understand CBE in the post-
CBE training survey, 71.43% of respondents in the mid-CBE training reported they had no or
very little additional individual training in CBE. Additionally, the mid-CBE training survey
asked participants to list facilitators and barriers they encountered while implementing CBE, and
no facilitators were listed. The differences in reported additional training between the mid-and
post-CBE training surveys and the lack of facilitators in the mid-CBE training survey suggested
that over time, there needed to be more explicit expectations regarding implementing CBE,
which may then lead to increased individual exploration of understanding of CBE. Additionally,
communication among colleagues became a barrier to implementing CBE, despite the increased
reliance on peer communication to understand CBE application.

The results of this project revealed that faculty had increased awareness and knowledge
regarding CBE. The impact of the increased knowledge and awareness may be reflected by the
38.89% of participants who reported having already implemented CBE into their course by the
end of the project. Additionally, participants provided preferences for additional training and
feedback regarding current training and communication. Therefore, the project's outcome may
have helped improve the transition experience into CBE between nursing leadership and nursing
faculty and certainly may provide helpful information for future endeavors. The effect of an

improved curriculum transition indirectly affects future nursing students who will be graduating from a CBE-based curriculum and, most importantly, improve patient care.

As explained above, there were differences between the number of participants reporting no or very little additional individual training regarding CBE in the mid-CBE training survey and the increase in the rating of self-exploration of CBE to gain understanding in the post-CBE training survey. It was anticipated that the amount of self-exploration of CBE to gain understanding would decrease over time due to the lingering effects of the introductory training presentation and ongoing faculty development regarding CBE. The difference in this result may be due to the number of responses in the mid-CBE training survey ($N = 14$) and post-CBE training survey ($N = 21$), in addition to the timing of the mid-CBE training survey. The mid-point CBE training survey was distributed to participants in September 2023, so faculty may have prioritized the start of the semester rather than the ongoing faculty development regarding CBE.

Limitations

This study had several limitations. First, there is no ability to directly link project outcomes to the effectiveness of the introductory CBE presentation because the faculty had ongoing development regarding CBE. Additionally, participants were asked to describe the effectiveness of the introductory presentation, but the question did not identify the name of the introductory presentation. Many responses were not applicable because faculty reported they did not remember the presentation. However, there were qualitative responses that described the effectiveness of the introductory presentation. Also, the introductory presentation was not accessible to faculty afterward. Finally, there are a limited number of similar studies regarding nurse faculty development during CBE implementation to compare the results of this project.

Additionally, while this project population consisted primarily of undergraduate nursing faculty members, a small number of graduate faculty members may have completed the pre-CBE training survey, as some graduate nursing faculty attended the introductory CBE presentation and a link to take the pre-CBE training survey was available to them as well. The addition of graduate faculty may have diluted the meaningful data that was designed to be obtained from undergraduate faculty. In the pre-CBE training survey, one question was removed due to an error in not allowing for more than one space for participants to report the number of years they had been teaching nursing at the institution. Any negative effect was mitigated by including an additional question that asked participants to report the number of years of teaching nursing overall. The mid-CBE training survey did not include the same six Likert-scale questions as the pre-and post-CBE training survey. Response bias may be present in the surveys due to the nature of using Likert-scale questions.

Conclusions

The results of this project indicate that the nurse faculty's knowledge and awareness regarding CBE were improved after implementing an introductory educational session, along with ongoing training offered by the College of Nursing. Additionally, ongoing surveys of faculty during the transition of curriculum change may be helpful for nursing leadership to identify areas of improvement and for supporting nursing faculty during curriculum change. The introductory CBE education presentation may not be sustainable for future research within this population because faculty development content will adapt as the date of the required implementation of the CBE curriculum approaches. The results of this study were shared with the curriculum committee to help leadership develop new faculty development opportunities based on qualitative feedback that included developing *workgroups* and *group learning*. Nursing

leadership should continue to survey nursing faculty during this transition phase to promote communication and improve faculty training. Future research regarding CBE should examine nurse graduates of the CBE-based curriculum to identify areas of improvement within the curriculum.

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Appendix
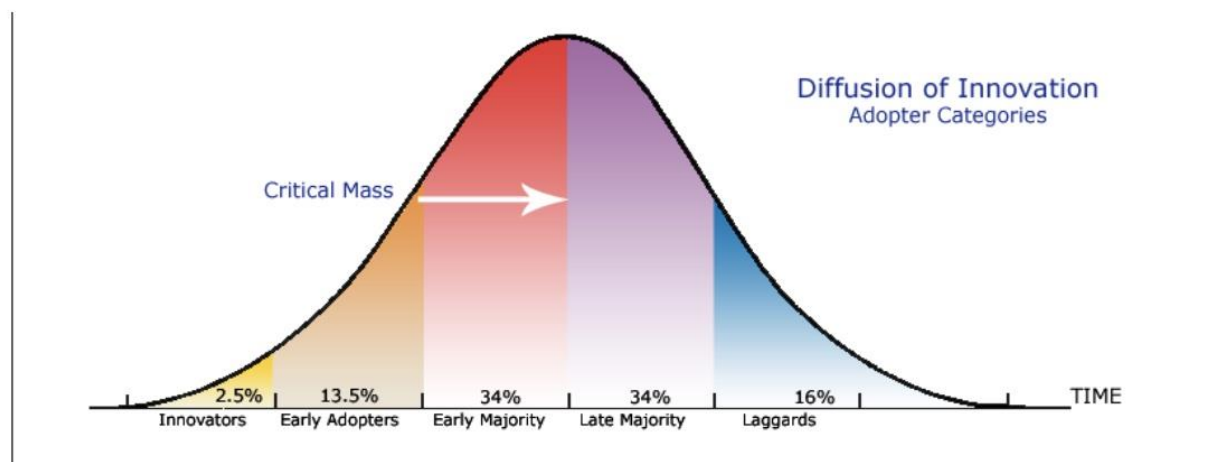
Figure 1. Diffusion of Innovation Theory: Adopter Categories. Source: Kaminski, J. (2011). Diffusion of innovation theory. *Canadian Journal of Nursing Informatics*, *6*(2). https://cjni.net/journal/?p=1444

Pre-CBE Training Survey

1. Please select your gender:
   a. Male
   b. Female
   c. Other
   d. Prefer not to answer
2. Please select your race:
   a. American Indian or Alaskan Native
   b. Asian
   c. Black or African American
   d. Native Hawaiian or Other Pacific Islander
   e. Caucasian
3. Please select your standard academic rank:
   a. Adjunct
   b. Lecturer
   c. Instructor
   d. Assistant Professor
   e. Associate Professor
   f. Professor
4. Please provide the number of years you have been teaching nursing:
5. Please provide the number of years you have been teaching at the university:
6. Please use the slider below to answer the following questions:
   a. Please mark how much of your course content is didactic (0-100)
   b. Please mark how much of your course content is skill-based (0-100)
7. Please answer how much you agree or disagree with the following statements:
   1. I understand why the American Association of Colleges of Nursing (AACN) *Essentials* require Competency-Based Education (CBE) in the nursing curriculum.
      a. Strongly disagree
      b. Somewhat disagree
      c. Neutral
      d. Somewhat agree
      e. Strongly agree
   2. I have sufficient knowledge about Competency-Based Education (CBE) to successfully implement its use in my courses.
      a. Strongly disagree
      b. Somewhat disagree
      c. Neutral
      d. Somewhat agree
      e. Strongly agree
   3. I understand how the undergraduate nursing program will incorporate CBE into its existing curriculum.
      a. Strongly disagree
      b. Somewhat disagree
      c. Neutral
      d. Somewhat agree

e. Strongly agree

4. I often rely on communication with fellow faculty members to help me understand the application of CBE to the curriculum.
   a. Strongly disagree
   b. Somewhat disagree
   c. Neutral
   d. Somewhat agree
   e. Strongly agree

5. I understand the expectation of me in incorporating CBE into my courses.
   a. Strongly disagree
   b. Somewhat disagree
   c. Neutral
   d. Somewhat agree
   e. Strongly agree

6. I have had to pursue my own exploration of CBE to gain understanding
   a. Strongly disagree
   b. Somewhat disagree
   c. Neutral
   d. Somewhat agree
   e. Strongly agree

7. Narrative: Please describe any facilitators or barriers you foresee to incorporating CBE into your courses. Please provide as much detail as possible.

Mid-CBE Training Survey

1. Narrative: Please describe any barriers or facilitators you have encountered regarding implementing CBE in your courses. Please provide as much detail as possible.

2. Please indicate how much additional training regarding CBE you have done on your own:
   a. None
   b. Very little
   c. A moderate amount
   d. A lot

3. Narrative: Please describe in as much detail as possible any additional training you would like regarding CBE.

Post-CBE Training Survey

1. I understand why the American Association of Colleges of Nursing (AACN) is incorporating Competency-Based Education (CBE) into the nursing curriculum.
   a. Strongly disagree
   b. Somewhat disagree
   c. Neutral
   d. Somewhat agree
   e. Strongly agree

2. I have sufficient knowledge of CBE to successfully implement its use in my courses.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
3. I understand how the undergraduate nursing program utilizes CBE in its existing curriculum.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
4. I often rely on communication with fellow faculty members to help me understand the application of CBE to the curriculum.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
5. I understand the expectation of me in incorporating CBE into my course.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
6. I have had to pursue my own exploration of CBE to gain understanding.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
7. I received sufficient communication from the nursing administration regarding the implementation of CBE.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree
8. Please explain your answer below in as much detail as possible:
9. I received sufficient faculty training about CBE.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

10. Please explain your answer below in as much detail as possible:
11. Have you been successful in implementing CBE into your courses?
    a. Yes
    b. No
12. Narrative: Please describe any barriers or facilitators you have encountered regarding implementing CBE. Please provide as much detail as possible.
13. Narrative: Please describe in as much detail as possible any additional training you would like regarding CBE.
14. Regarding the question above, please select how you would like to receive additional training.
    a. Email
    b. In-person training
    c. Virtual Meeting (Zoom)
    d. Asynchronous online training
    e. Video recordings
15. Please provide how you believe this presentation helped or not to provide information about incorporating CBE into your courses. Please explain your answer below in as much detail as possible.

Table 1

Demographic Data

Demographic Variable	*n*	%
Age in Years (*N* = 19)		
30-40	7	36.84
41-50	7	36.84
51-60	2	10.53
61-65	3	15.79
Gender (*N* = 25)		
Male	0	0.00
Female	25	100.00
Other	0	0.00
Prefer not to answer	0	0.00
Race (*N* = 25)		
American Indian or Alaskan Native	0	0.00
Asian	0	0.00
Black or African American	3	12.00
Native Hawaiian or Other Pacific Islander	0	0.00
Caucasian	22	88.00
Standard Academic Rank (*N* = 25)		
Adjunct	0	0.00
Lecturer	3	12.00
Instructor	9	36.00
Assistant Professor	8	32.00
Associate Professor	4	16.00
Professor	1	4.00
Years of Experience Teaching Nursing (*N* = 23)		
0-5	7	30.43
6-10	6	26.09
11-15	6	26.09
16-20	2	8.70
21-25	1	4.35
26-30	1	4.35
Amount of Course Content that is Didactic (*N* = 21)		
0-25	7	33.33
26-50	3	14.29
51-75	2	9.52
76-100	9	42.86
Amount of Course Content that is Skill-based (*N* = 21)		
0-25	7	33.33
26-50	4	19.05
51-75	2	9.52
76-100	8	38.10

Table 2

Pre-CBE Training: Participants' Self-reported Knowledge, Attitudes, and Beliefs Regarding CBE (N = 20)

Question	Strongly Disagree		Somewhat Disagree		Neutral		Somewhat Agree		Strongly Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
I understand why the American Association of Colleges of Nursing (AACN) Essentials require Competency-Based Education (CBE) in the nursing curriculum.	2	10.00	2	10.00	1	5.00	6	30.00	9	45.00
I have sufficient knowledge about Competency-Based Education (CBE) to successfully implement its use in my courses.	4	20.00	4	20.00	7	35.00	3	15.00	2	10.00
I understand how the undergraduate nursing program will incorporate CBE into its existing curriculum.	6	30.00	8	40.00	4	20.00	2	10.00	0	0.00
I often rely on communication with fellow faculty members to help me understand the application of CBE to the curriculum.	2	10.00	1	5.00	4	20.00	6	30.00	7	35.00
I understand the expectation of me in incorporating CBE into my courses.	6	30.00	4	20.00	1	5.00	6	30.00	3	15.00
I have had to pursue my own exploration of CBE to gain understanding.	1	5.00	1	5.00	4	20.00	10	50.00	4	20.00

Table 3

Mid-point CBE Training: Amount of Additional CBE Training that Participants Completed Individually (N = 14)

Amount of Training	*n*	%
None	2	14.29
Very little	8	57.14
A moderate amount	4	28.57
A lot	0	0.00

Table 4

Post-CBE Training: Participants' Self-reported Knowledge, Attitudes, and Beliefs Regarding CBE (N = 21)

Question	Strongly Disagree		Somewhat Disagree		Neutral		Somewhat Agree		Strongly Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
I understand why the American Association of Colleges of Nursing (AACN) is incorporating Competency-Based Education (CBE) into the nursing curriculum.	0	0.00	0	0.00	0	0.00	7	33.33	14	66.66
I have sufficient knowledge about Competency-Based Education (CBE) to successfully implement its use in my courses.	1	4.76	3	14.29	2	9.52	12	57.14	3	14.29
I understand how undergraduate nursing utilizes CBE in its existing curriculum.	2	9.52	7	33.33	4	19.05	5	23.81	2	9.52
I often rely on communication with fellow faculty members to help me understand the application of CBE to the curriculum.	2	9.52	2	9.52	2	9.52	6	28.57	9	42.86
I understand the expectation of me in incorporating CBE into my course.	0	0.00	5	23.81	4	19.05	5	23.81	7	33.33
I have had to pursue my own exploration of CBE to gain understanding.	0	0.00	1	4.76	2	9.52	7	33.33	11	52.38

Table 5

Number of Participants who Successfully Implemented CBE in their Courses Post-CBE training (N = 18)

Question	*n*	%
Have you been successful in implementing CBE into your courses?		
Yes	7	38.89
No	11	61.11

Table 6

Pre-CBE Training Narrative Responses (N = 13)

Question: Please describe any facilitators or barriers you foresee to incorporating CBE into your courses. Please provide as much detail as possible.					
Facilitators			**Barriers**		
Code	Property	Exemplar	Code	Property	Exemplar
It's a major shift, and a good one		"It's a major shift, and a good one"	Lack of understanding	Expectations	
Workshops			Change is hard		"Change is hard"
Expert faculty resources			Time		
			Lack of direction		
			Lack of direction by AACN	Good: Innovative, creative Bad: Lack of guidance	
			Limited leadership assistance		
			Vague and overwhelming language		
			No formal curricular mapping		

Table 7

Mid-point CBE Training Narrative Responses

Question 1: Please describe any barriers or facilitators you have encountered regarding implementing CBE in your courses. Please provide as much detail as possible. (*N* = 11)

Code	Property	Exemplar
Lack of understanding		
Mapping challenges		
Accreditation challenges		
CBE CE overwhelming		

Question 2: Please describe in as much detail as possible any additional training you would like regarding CBE. (*N*=10)

Code	Property	Exemplar
Anything		"Anything would help!"
Small group planning		
Information on outcomes	CBE implementation, standards and best practices, teaching and learning strategies	
Robust integration explanation		
Face to face seminar		

Table 8

Post-CBE Training Likert Responses

Question	Strongly Disagree		Somewhat Disagree		Neutral		Somewhat Agree		Strongly Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
(1) I received sufficient communication from the nursing administration regarding the implementation of CBE. (*N* = 20)	0	0.00	6	30.00	6	30.00	4	20.00	4	20.00
(2) I received sufficient faculty training about CBE. (*N* = 20)	3	15.00	6	30.00	4	20.00	5	25.00	2	10.00

Table 9

Post-CBE Training Narrative Responses

(Regarding Question 1) Narrative: Please explain your answer in as much detail as possible. (N = 12)		
Code	Property	Exemplar
Sufficient communication		
Insufficient communication		
Better than past communication		"I believe our undergraduate chair, curriculum committee, and administrators has done well in communication of CBE in comparison to other changes that have occurred throughout my time at [redacted]"
Need clearer expectations		
Clear information		

(Regarding Question 2) Narrative: Please explain your answer in as much detail as possible. (N = 11)		
Code	Property	Exemplar
Training not helpful		
Sufficient	Mentor	
Need for more training	New faculty	
Additional information needed		
Need more faculty development		

Narrative: Please describe any barriers or facilitators you have encountered regarding implementing CBE. Please provide as much detail as possible. (N = 15)					
Facilitators			**Barriers**		
Code	Property	Exemplar	Code	Property	Exemplar
Leadership support			Time		
New technology			No clear expectations		
Clear communication			More direction needed		

Understanding of nursing organization publications	CBE big and complicated	
	Lack of clear understanding among colleagues	"Barriers: general outlook and drift of colleagues in the School/College of Nursing."

Narrative: Please describe in as much detail as possible any additional training you would like regarding CBE. ($N = 11$)		
Code	Property	Exemplar
Expert consultant		
Course mapping		
Help from expert in-house faculty		
Collaboration		
Need for work groups		
Implementation of AACN requirements		
Tangible examples		
Exemplar of CBE threaded through course		

Narrative: Please provide how you believe this presentation helped or not to provide information about incorporating CBE into your courses. Please explain your answer below in as much detail as possible. ($N = 9$)		
Code	Property	Exemplar
Set the stage for understanding		
Basic representation		
Wonderful and needed		
Introductory in nature		
Provided some expectations		
Identified what is missing		
Vaguely remember		

Table 10

Pre-CBE Training Audit Trail

Question: Please describe any barriers or facilitators you foresee to incorporating CBE into your courses. Please provide as much detail as possible.		
Code		**Quote**
Facilitators	Barriers	
	Lack of understanding • Expectations	"Lack of understanding of expectations; lack of overall knowledge about CBE"
	Lack of knowledge	
	Lack of understanding	"I'd like additional training and understanding."
	Lack of training	
	Dependent on communication Dependent on coordination	"Within the confines of our traditional program of study, CBE depends largely on communication and coordination of faculty at all levels of the program to identify where competencies are met and prevent duplication."
It's a major shift, and a good one	Change is hard Lack of simulation support Risk of student failures and delays Need for follow through on student failures	"Barriers—it's not the status quo! Change is hard. Also, simulation support isn't where it needs to be yet for us to use it to its fullest potential for CBE. Finally, the risk of student failures/progression delays. Do we have a plan for what happens when competencies aren't met, and/or the backbone to truly require competency? Facilitators- the AACN essentials. To show we are meeting the subcompetencies, we must find ways to prove students learned, not that professors taught. It's a major shift, and a good one. The pressure of meeting these accreditation standards will keep us moving in the right direction." "Evaluation of students in the clinical setting"

	Vague and overwhelming language	"The language surrounding CBE is vague and overwhelming. There are so many competencies and so many words. It feels like one would need to do a study of CBE just in order to understand what it is and what it is asking."
Expert faculty resources	No formal curriculum mapping	"Barriers: No formal curricular mapping of CBE has been started in our program (or at least not shared with faculty).
	Limited leadership assistance	Limited or delayed involvement of leadership to assist faculty with CBE mapping and its incorporation.
	Not addressed by curriculum committee	Curriculum committee has not addressed. Facilitators: We have expert faculty that can serve as a resource to others on how to align our curriculum to CBE."
	Lack of understanding	"Understanding what exactly the requirements are. I need examples of how it's been done in other places.
	Change is hard	Barriers: we all get in a rut and change is difficult."
	No barriers	"I see no barriers to incorporating CBE into my course curriculum."
	Need for implementation assistance	"I will need help with practical implementation of CBE into my courses."
Workshops	Time	"Barriers: Time; Facilitators: Workshops"
	Lack of direction by AACN • Good-innovative, creative • Bad-lack of guidance	"I am a member of a CBE national workgroup. It seems the main barrier is really the lack of direction. We (the profession of nurse educators) are joining together to work together to make plans for implementation and share ideas, but the direction from the AACN is not there. In some ways, this is good, because it allows us to be innovative, creative, and use our education; however, it is a scary unknown to come into without much guidance."

| Time | "There could potentially be a time restriction if courses are not received in a timely manner. This will allow time to really review and assess your class." |

Table 11

Mid-point CBE Training Audit Trail

Question 1: Please describe any facilitators or barriers you have encountered regarding implementing CBE in your courses. Please provide as much detail as possible.		
Code		Quote
Facilitators	Barriers	
	Lack of understanding	"Lack of understanding as to how to do so."
	Lack of understanding	"I honestly just don't understand how to implement this."
	Mapping challenges	"Challenges with how it is overall mapped through the curriculum—wanting to remain consistent with all can be so challenging!"
		"I have not implemented this yet."
	Lack of understanding

CBE CE overwhelming | "General lack of understanding of CBE and how to implement. What are the competencies and how do we apply them to our classes? Continuing education feels overwhelming about this topic." |
	No barriers	"None"
	Lack of use clarity	"The most significant barrier has been the lack of clarify about how ICON will be using CBE in our program."
		"Hard to be specific about how to do CBE."
		"Lack of representation and inclusiveness"
	Concern for clinical realism

Lack of effective feedback loop for students

Need for equitable student assessment | "Clinical Realism+Ensuring that competency assessments accurately reflect the complexity of ICU scenarios can be challenging. Feedback Loop: Establishing a robust feedback mechanism for students in a fast-paced ICU setting can be difficult. Equity in Assessment+Ensuring fairness and accessibility of assessments for all students, regardless of background or experience, is essential.\Accreditation and Regulatory Alignment+Ensuring alignment with accreditation and regulatory requirements specific to ICU nursing education can be a persistent challenge." |

Need for accreditation alignment	
Lack of lab hours	"Lack of lab hours for students to master a skill and then apply the skill in a simulation environment."

Question 2: Please describe in as much detail as possible any additional training you would like regarding CBE.	
Code	Quote
Anything	"Anything would help"
	"I am a member of a National and regional workgroup related to CBE."
Anything	"Any always help!"
Anything	"Anything would help!"
Independent modules	"I would love some modules to independently complete so I can train on my own with a centralized hub of information."
Information on CBE implementation	"More training on how to implement CBE, standards & best practices"
Information on standards and best practices	
Small group planning	"Seeking small groups to discuss plans as well as discuss what works or not."
Information on teaching and learning strategies	"Teaching and learning strategies"
Robust integration explanation	"Just a robust explaination of how we are to integrate both here with the CBC- Thanks!!!"
Face to face seminar	"I have joined a CBE national group. But having a face to face seminar workshop is a more conducive learning environment."

Table 12

Post-CBE Training Audit Trail

Question 1: Please explain your answer to the previous question. (Provide feedback to the following statement: I received sufficient communication from the nursing administration regarding the implementation of CBE.)

Code	Quote
No real examples	"Although, [redacted] ICON has provided use with outside resources on CBE, I still have not seen real examples of it being used in the curriculum, other than in the EL courses."
Clear information	"Due to having a mentor as a faculty fellow, this information was made clear to me"
Better than past communication Sufficient communication	"I believe our undergraduate chaiir, curriculum committee, and administrators has done well in communication of CBE in comparison to other changes that have occurred throughout my time at [redacted], including concept based curriculum."
Need clearer expectations	"I believe further guidance & clearer expectations need to be communicated regarding CBE implementation."
Sufficient communication	"As a member of the curriculum committee, I believe this to be so, though, I also recognize that faculty who are not involved in this committee/UG leadership may not understand." "I understand the deadline to implement is Dec. 2026; however, we have yet to identify a tool/process to conduct the mapping of the Essentials to our curriculum."
Trainings are different Need to record training Separate chunks not helpful	"There have been opportunities on training but I haven't been able to attend some and those sessions aren't always recorded for those that cannot attend. I also feel like we are getting this information in separate chunks that make it difficult to fully comprehend how we will implement in a cohesive manner." "it has started with the new admin we are hearing more now" "Emails, meetings, reports"

Sufficient communication	"It has been communicated that we will be incorporating it, and some examples have been given. I was asked to attend a CBE conference and that's where I learned all about it. So in that way,, [redacted] helped me learn how to do it."

"I have shaped my course to the learning outcomes of the BSN essentials consistently over time. The new terminology does not obscure the fact that graduates of nursing programs have always been expected to be competent in what is expected of a first year of practice." |
| Insufficient communication | "Until this last year, CBE has been minimally discussed and the expectations and process to update the curriculum has not been shared." |

Question 2: Please explain your answer below in as much detail as possible. (I have received sufficient faculty training regarding CBE).

Code	Quote
Need for exemplars	"As stated above, we've received outside resources to educate ourselves on the model, but no real tangible training or exemplars."
Sufficient • Mentor	"My mentor ensured that I completely understood"
Need for more training • New faculty	"I believe we need more continuing ediucation especially for novice nurse educators/\faculty on our team with no educational experience."
Need more time	"Additional time for faculty training would be very valuable to allow for not only more understanding, but also creating the time for this work to be done."

"X" |
| Need more faculty development | "Undergrad nursing has yet to conduct faculty development about CBE, the AACN Essentials, mapping, timeline, etc. We do have several links to articles and webinars that we have been asked complete on our own."

"See explanation above..." |

Additional information needed	"Until it is fully integrated it is hard to know exactly how much training is needed."
Training not helpful	"I'm feeling better about what it is and what the requirements are. I will need help actually immplementing it and think we all will ."
Training not helpful	"The training is superfluous to what I already do."
	"As abovementioned. Our focus as faculty has been concept based education with little mention of competency based education, except that it would be a dictated from AACN."

Question 3: Please describe any barriers or facilitators you have encountered regarding implementing CBE. Please provide as much detail as possible.

Code		Quote
Facilitators	Barriers	
		"I've incorporated a simulation experience in my leadership course, but feel there is much more CBE needed."
No barriers • Course coordinator organized		"I have not had any barriers due to the courses I typically teach being laid out before I get there by the course coordinator."
		"I am developing a new course and will be doing this in the spring. I have been able to do this in one of my other courses to some degree."
	Time	"Time is the greatest barrier to implementing CBE at the moment"
	More direction needed	"We have not implemented CBE into our curriculum for UG yet. While I have loosely considered ways to implement into my course, I feel this work is premature until we have a direction as a whole from ICON."
	CBE big and complicated	"It is an overwhelming task that is hard to wrap your brain around. It feels too big and complicated to even begin implementing."
	Too early for implementation	"I think it is too early for these questions as it has only been one semester. Additionally leadership is still working on exactly how this will be implemented"

		"We have yet to begin the process."
	No clear expectations	"not sure of the expectations for each course"
	Time	"Lab and clinical components lend themselves to demonstration of competence, but I would like to know if there are other things we should be doing. Clearly, time is always a barrier to change."
Leadership support New technology Clear communication	Time	"Barriers to implementing include extra time input for changes and faculty training needs. Facilitators include leadership support & flexibility, use of new technology CANVAS, and clear communication in mtgs/emails." "I don't feel like there has been a "start" date. I don't feel as if we have an overall plan for implementation in the ICON."
Understanding of nursing organization publications	Lack of clear understanding among colleagues	"Barriers: general outlook and drift of colleagues in the School/College of Nursing. Follow whatever happens to be published at the time. Facilitators: close reading, understanding and application of what nursing organizations publish as expectations for a graduate of a BSN program of study."
	Personal background knowledge Unclear expectations	"As undergraduate faculty I am just beginning to learn the basics of CBE, so my greatest barrier is my own background knowledge. I have attended several Webinars and watched instructional videos to gain foundational information, however the expectations of faculty are not yet clear." "We are just now mapping and talking about how to implement CBE in our courses. No course has yet to implement CBE."

Question 4: Please describe in as much detail as possible any additional training you would like regarding CBE.

Code	Quote
Exemplar of CBE threaded through course	"I would like to see an example of CBE items in an exemplar didactic course. I would like to see how it's threaded through the whole course, from course objectives, to student learning outcomes, to in-class activities, and then student evaluations."

Logistics of CBE	"Additional training on the logistics of CBE, CBE evaluation strategies"
CBE evaluation	
Course mapping	"I would like to have a workshop where we work together to map to our specific courses."
Expert consultant	"I believe bringing in an expert/consult who walks us through the mapping of one course, and have this serve as the roadmap to guidance us as we complete the exercise for the entire program, will be immensely helpful and appreciated."
Complete directed training	"From the ground up training needed. Most all training has been on my own."
Help from expert in-house faculty	"I think we need our experts in CBE within our faculty to work with coordinators at each level to discuss ways in which we can include CBE. I think we need more structure to how the essentials and competencies are addressed on a program level, at each level (1,2,3, etc), and within each course. At this point, if feels like an abstract notion and I need to see something more tangible for our specific program."
Address essentials and competencies	
Tangible examples	
Expert consultant	"have consultant come in and help us; looking at our courses including clinical and sim and lab and see how we can implement this"
Updated teaching techniques	"updated teaching techniques and matching course info across the courses, tech integration, report of the data analysis from this survey into change-making, IPE & collab, and flexibility."
Technology integration	
Information from this survey	
Collaboration	
Need for work groups	"We need to form work groups with someone to lead them who is an expert in CBE - or who at least has been to the AACN workshop. We have watched 3 webinars on CBE and that has been helpful."
	"None."

| Implementation of AACN requirements | "In addition to the introductory videos describing what and why, I would need training on how best to implement and meet expectations by AACN." |

Question 5: Please provide how you believe this presentation helped or not to provide information about incorporating CBE into your courses. Please explain your answer below in as much detail as possible.

Code	Quote
	"This evaluation did not help, nor provide information to me on how to incorporate CBE into my courses; but it did allow me to convey my personal needs as it relates to CBE training."
Set the stage for understanding	"This set the stage for understanding what CBE is, but additional trainings are definitely needed to help faculty move from understanding to utilizing CBE in our courses"
Basic representation Wonderful and needed	"In all honesty, I do not remember the presentation. What I do remember is that it was a basic representation of CBE, which I think was wonderful and needed at the time. In my opinion, we are now needing movement in our curriculum so that we can go forward."
Vaguely remember	"N/A - the presentation was over 6 months ago, I vaguely remember the information provided."
Introductory in nature Appreciated	"It was introductory in nature. Much more is needed. appreciated the first step" "I assume we are talking about the webinars from AACN...I have a general understanding of the essentials and what is meant by CBE. It didn't help me to know how it is different than what we are doing, except to say testing is not enough. It is a big idea that I need more detail on in how it pertains to our specific program." "Unsure how to answer this/"
Provided some expectations	"IT is always good to be informed of what is expected for performance measures in the first year of practice after successfully completing the licensure exams."

Identified what is missing	"By identifying what is missing as we begin this transition to a new curriculum format, and hopefully how best to provide ongoing education with this change"
Identified need for ongoing education	