

Evaluating Student and Faculty Satisfaction with a Pedagogical Framework

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Abstract

Most schools of nursing utilize technology to deliver courses, and entire curricula, through a combination of face to face (f2f), web-enhanced, and fully online strategies. Challenges associated with course delivery may include geographic and technological barriers, lack of instructional design support, inconsistent, inadequate or unreliable support infrastructure, and varying degrees of faculty and student experiences with learning management systems.

The purpose of this exploratory study was to evaluate student and faculty satisfaction with two courses structured using a pedagogical framework; identify advantages and disadvantages of the courses; and identify instructional design recommendations for implementation of the framework. Based on results from the study, there is evidence to support use of the ICARE framework in structuring quality, satisfying courses from both student and faculty perspectives.

Résumé

La plupart des écoles de sciences infirmières utilisent la technologie pour dispenser les cours et même des curricula entiers en recourant à une combinaison de stratégies, soit : en face-à-face, améliorée par le Web ou bien entièrement en ligne. Les défis posés par la diffusion des cours peuvent inclure des frontières géographiques et technologiques, le manque de support à la conception pédagogique, des infrastructures de soutien irrégulières, inadéquates ou non fiables, de même que des niveaux variés d'expérience des systèmes de gestion de l'enseignement, parmi les professeurs et les étudiants.

Le but de cette étude exploratoire était d'évaluer la satisfaction des étudiants et professeurs à l'égard de deux cours qui ont été conçus en utilisant un cadre pédagogique; d'identifier les avantages et désavantages liés aux deux cours et d'identifier des recommandations portant sur la conception pédagogique dans le cadre de la mise en œuvre du cadre conceptuel. Selon les résultats de l'étude, il y aurait lieu d'encourager l'utilisation du cadre conceptuel ICARE dans l'élaboration de cours de qualité et satisfaisants et ce, tant du point de vue des étudiants que de celui des professeurs.

Introduction

Technology continues to impact the delivery of nursing education as colleges and universities are required to develop more efficient and flexible delivery strategies. In more traditional face-to-face (f2f) classroom environments, faculty may utilize a learning management system (LMS) such as Blackboard, Moodle or Desire2Learn for hosting course material, providing access to resources, and record keeping. In web-enhanced or blended learning environments—environments characterized by a combination of f2f and web-supported learning—the LMS provides a means of engaging students outside the classroom and may even replace the need to meet on a weekly basis. In fully online environments, students do not attend f2f classes and the LMS becomes the forum for conducting classes and facilitating interactions between learners and the instructor.

Most schools of nursing across Canada utilize technology to offer courses, and sometimes an entire curriculum or program, using a combination of f2f, web-enhanced (blended), and fully online strategies. While the benefits related to access and flexibility are self-evident when courses are delivered using these strategies, various challenges also emerge. These challenges include, but are not limited to, geographic and technological barriers, lack of instructional design support, inconsistent, inadequate or unreliable infrastructure support, as well as varying degrees of faculty and student experience with online learning environments. Faculty and student engagement may be

further affected by whether or not there is a consistent pedagogical framework that enables them to navigate a course in meaningful ways. In the context of this paper, the term pedagogical framework refers to a scaffolding that guides and supports the student through the learning process. When a pedagogical framework remains consistent regardless of the delivery method (f2f, web-enhanced [blended], and fully online), there is an advantage for the learner: he or she does not have to spend time and energy determining how each discrete learning experience is structured and may, instead, get to the business of learning more readily than otherwise.

During the past several years, the concept of e-learning has emerged. While there is no commonly held definition, (Bates, 2001), e-learning can be generally described as the integration of pedagogy, information technology, and the Internet into the teaching and learning experience (Glen, 2005). When web-enhanced and fully online delivery strategies have been evaluated, student satisfaction, achievement, and success have been linked to faculty expertise and how well faculty engage students (Bloom & Hough, 2003; Choi, 2003; Lim, Kim, Chen & Ryder, 2008; Frith & Key, 2003; Lee & Rha, 2009; Menchaca & Bekele, 2008; Mitchell, Ryan, Carson & McCann, 2007; Salyers, 2005; Woo & Kimmick, 2000).

There is additional strong evidence that e-learning can provide more flexible and creative learning opportunities, as well as greater access to learning experiences than might otherwise be possible due to geographic and other restraints including time and busy lifestyles (Kearns, Shoaf & Summey, 2004; Reeves & Reeves, 2008; Ryan, Carlton & Ali, 2004; Salyers, 2005; Thiele, 2003; Weber & Lennon, 2007). By comparison, minimal research has been published that compares student and faculty satisfaction with e-learning strategies, particularly those that structure courses and entire nursing curricula using a particular pedagogical framework.

Purpose

The purpose of this exploratory study was to determine whether students and faculty differed in their perceptions of courses structured using a pedagogical framework called Introduction, Connect, Apply, Reflect, and Extend (ICARE). The ICARE framework will be explained more fully later in this paper. A second purpose of the study was to determine whether there were significant differences in overall course satisfaction when courses were structured using the framework. A third purpose was to determine the advantages and disadvantages of students and faculty participating in a course that utilized the framework. A fourth purpose was to identify instructional design recommendations based on implementation of the framework across the curriculum. In the context of this paper, instructional design is a practice that includes advance planning around all components of a learning experience including its conceptualization, development, delivery/implementation and evaluation. A key consideration in the instructional design process is the pedagogical framework that will best enhance the desired learning. Based on these purposes, the specific research questions explored in this study were as follows:

1. To what extent do student and faculty perceptions differ when evaluating components of courses structured using the ICARE framework?
2. To what extent are there differences in overall course satisfaction between students taking a course and faculty teaching a course that uses the ICARE framework?
3. What are the advantages and disadvantages of taking a course using the ICARE framework?
4. What are the instructional design recommendations associated with implementing the ICARE framework in a School of Nursing?

Background and Need

The university described in this paper has four campuses in British Columbia. The main campus is located approximately 10 hours away from Vancouver by car. Three regional campuses are located throughout British Columbia in rural and remote areas of the province. The university has a student population of nearly 4,200.

At the undergraduate level, the School of Nursing offers a bachelor's degree in nursing (BScN) in partnership with two regional colleges, a post-diploma BScN, and a Rural Nursing Certificate. At the graduate level, two options, the Master of Science in Nursing (Family Nurse Practitioner [MScN-FNP]) as well as the Master of Science in Nursing (MScN-Thesis Stream) are offered. Total enrolment across all programs and campuses is approximately 650 students. Courses are offered utilizing f2f, web-enhanced (blended), and fully online formats at all campuses.

Based on end-of-course student surveys and informal feedback provided by faculty over a period of two years, priority challenges about how courses were offered in the School of Nursing were

identified. The first challenge related to faculty experience and expertise with e-learning formats. Faculty were inconsistent in their delivery of courses (e.g., one faculty member might deliver his or her course using a f2f format, while another might utilize a web-enhanced or fully online format). Some of them were avid users of Blackboard, Moodle, or Desire2Learn and provided students with a variety of learning experiences including engagement through discussion boards, online examinations, links to online resources, and so forth. Other faculty utilized various LMS only to host course syllabi. A second challenge related to the variation in students' ability to navigate through their courses and to experience meaningful learning. Students frequently cited difficulties in finding course materials and general navigational issues for courses hosted online. A third challenge was that, at the time of the study, the School of Nursing retained only one full-time Instructional Designer and three part-time student assistants to support all of its course formats (f2f, web-enhanced, fully online) within the School. While many technological, geographic, and other variables impacted student and faculty satisfaction with the teaching/learning experience, the three challenges previously discussed were identified as highest priority for improvement or change.

Pedagogical Framework

In this study, the Introduction, Connect, Apply, Reflect, and Extend (ICARE) system was used. It is a pedagogical framework developed by staff and faculty at San Diego State University in 1997 to structure and organize course modules, modules being natural sub-sections of courses. The 5-steps of ICARE are repeated in each module of a course and can be used in all learning contexts; for example, once a student is comfortable with the framework, he or she can take courses delivered using any delivery strategy with competence and confidence.

In the "Introduction" section of any ICARE module, context is provided. For example, learning objectives and reading assignments might be presented. The "Connect" section might provide lecture material and information to be discussed in other ICARE sections. In the "Apply" section, students might be required to write a short paper or complete a self-assessment in the form of a quiz, thereby demonstrating synthesis and application of ideas presented in the module. In the "Reflect" section, students might be asked to reflect on newly developed skills and knowledge (e.g., lessons learned, etc.). The "Extend" section might be structured around evidence-based articles associated with concepts presented in the module and "real world" applications.

The framework was implemented at the University across the majority of programs offered by the School of Nursing in an effort to provide quality f2f, web-enhanced, and fully online learning experiences for all students. More information regarding ICARE is presented by Hoffman and Ritchie (1998; 2005). Prior to this implementation, no pedagogical framework had been utilized to structure courses.

Previous research based on the ICARE model found no differences in technical ability, learning styles, learning outcomes, and course satisfaction for graduate nursing students enrolled in face-to-face and web-enhanced sections of a course that used the ICARE framework (Salyers, 2005). Overall, students in the web-enhanced section were more satisfied with the course, and reported advantages such as greater flexibility in scheduling, less travel, and greater independence and self-pacing in relation to content. These findings suggest that web-enhanced courses using the ICARE framework can provide a valid alternative to more traditional face-to-face classroom formats, and may remove some of the barriers typically associated with pursuing advanced nursing degrees.

Methods

This exploratory study included two distinct processes. The first process involved implementation and piloting of the ICARE framework within the School of Nursing. Eight faculty were surveyed regarding their experience with piloting the framework. As part of a parallel process, the ICARE framework was used in two medical-surgical courses where students were surveyed regarding their experience with the framework. The following sections more specifically outline the procedures followed for both processes.

Subjects

A convenience sample including students enrolled in a second year medical-surgical course ($n = 10$) and a fourth-year medical-surgical course ($n = 19$) participated in the study. Students enrolled in the two courses were from one of the regional campuses. Faculty ($n = 8$) who had agreed to pilot the ICARE framework in their courses also participated. Research Ethics Board (REB) approval was obtained prior to conducting the study.

The Pilot: Implementation Procedures

All faculty in the School of Nursing were invited to pilot the ICARE framework. Based on this call for

participation, eight faculty piloted the framework in their courses during the Fall 2008 and Winter 2009 semesters. Transitioning of the courses to the ICARE framework occurred prior to the Fall 2008 semester, with the Instructional Designer taking a lead role in adapting and individualizing courses. In total, the ICARE framework was used in two medical-surgical, one maternity, three rural nursing certificate, and two nurse practitioner courses.

Because of frequent comments by students and faculty regarding variation and inconsistency in course designs, it was important to provide students and faculty with a consistent look and feel to their courses. Further time and energy was expended to garner the support of faculty to implement the ICARE framework. Since the initiative was supported by the Chair of the School of Nursing, potential barriers were minimized. Re-visiting the idea of course interface, rather than pioneering their own visions of course design, faculty were encouraged to work closely with the Instructional Designer who made recommendations about course look and feel. These recommendations tended to increase buy-in.

The Implementation Team dedicated to the conversion work to the ICARE framework included the aforementioned Instructional Designer, two student assistants, and one technical assistant. The student assistants did interpretive work related to the course conversions (e.g., made informed decisions about layout and configuration and performed text editing at an appropriate level). The technical assistant converted content from one layout to another, based on clear directions; the technical assistant did not make decisions about layout choices or edit text. Faculty were also encouraged to design their own web-based courses using the ICARE framework to the best of their personal ability. This work depended on 1) aptitude, 2) time to learn, and 3) time to do conversions.

Converting a legacy course with more than 30 HTML pages per module to ICARE took, on average, between 20-30 hours. Of the two fully online programs, one was converted in its entirety before any work was done on the second. The goal was to have neither distance program offering some courses in legacy format and some in ICARE. Undergraduate courses were converted opportunistically; they were converted based on factors such as instructor's receptivity, ability and comfort with the new format, sufficient time, as well as available support resources. Some legacy and ICARE courses ran simultaneously in the undergraduate programs where f2f elements simplified student orientation and familiarity with the online component. While distance course conversions were a high priority at the undergraduate level, the graduate Nurse Practitioner program was the first to be converted because of its fully online nature. Course conversions involved unforeseen time commitments and costs. Members of the implementation team incurred up to 20 hours per week of overtime, with a great deal of additional time expended on the part of the Instructional Designer. Overtime was a specific issue in full-course conversions when the team was required to construct an ICARE course from print-format materials.

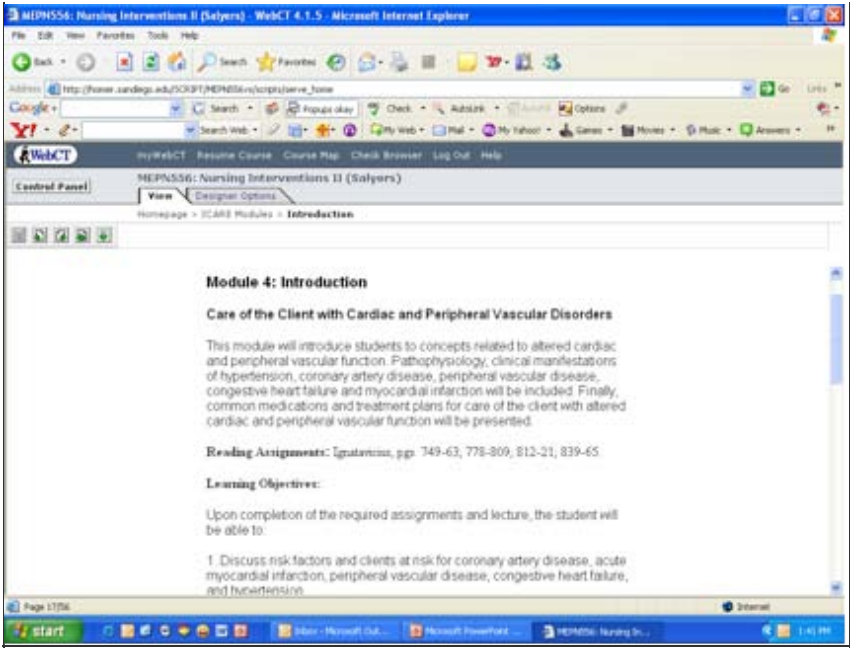
No two ICARE courses looked identical, a circumstance in line with the faculty's freedom of expression. In short, the ICARE guidelines established a basic scaffold from which to proceed, allowing for faculty interpretation and application of important discipline-specific and other teaching and learning principles. All members of the implementation team were aware of standards and comfortable with the idea of variations in order to preserve faculty freedom. At the same time, faculty were mentored so that they would choose acceptable variations on the ICARE framework and make choices that were compatible with their time and technical capacity for building and maintaining their courses.

The Pilot: Course Procedures

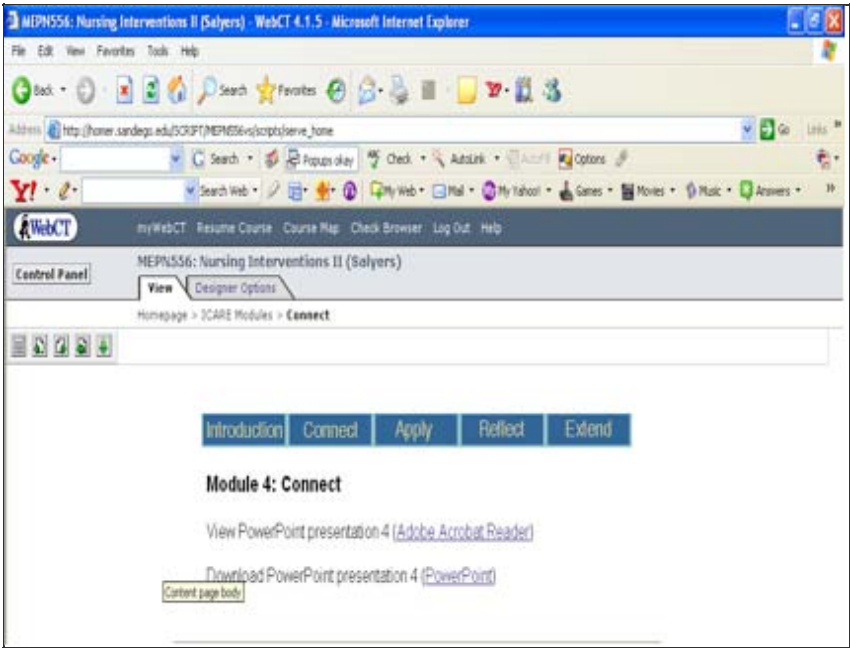
The second year medical-surgical course used the ICARE framework and was structured over a 12-week period. During the course, the involved faculty member from the main campus met with students at a regional campus once per week for eight weeks by video-conference. On four occasions during the semester, the faculty member traveled to the regional campus to meet f2f with students. There were 12 web-based ICARE modules to be completed by students throughout the semester.

The fourth year medical-surgical course used the ICARE framework and was structured over a 7-week period. Similar to the procedures used in the second-year course, the faculty offered both video-conference classes and f2f sessions. The first week of the course was conducted by video-conference, the second week f2f, and so forth. In total, over the period that the course ran, students completed 12 web-based ICARE modules outside of class. The series of screenshots that follow display actual modular components from the two medical-surgical courses:

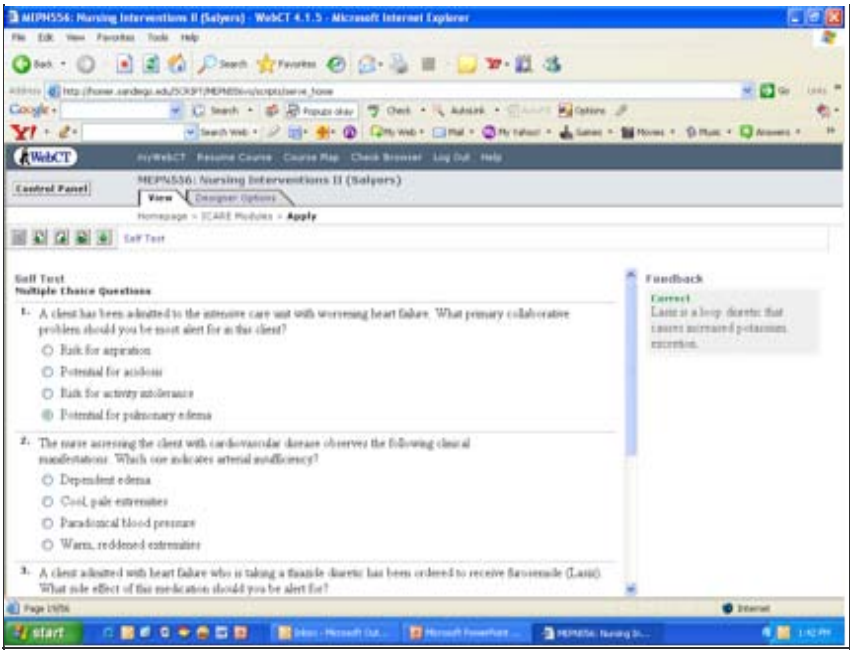
Introduction



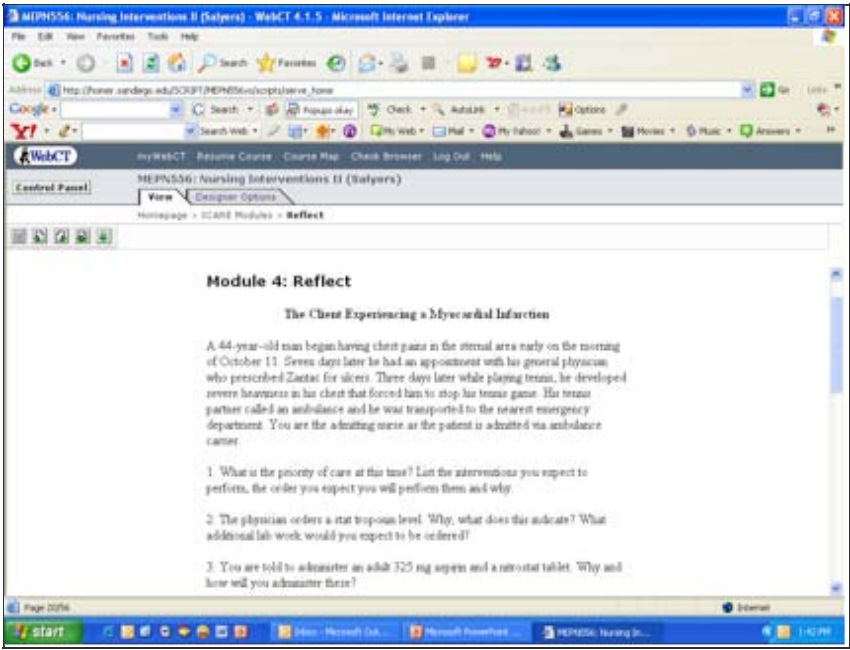
Connect



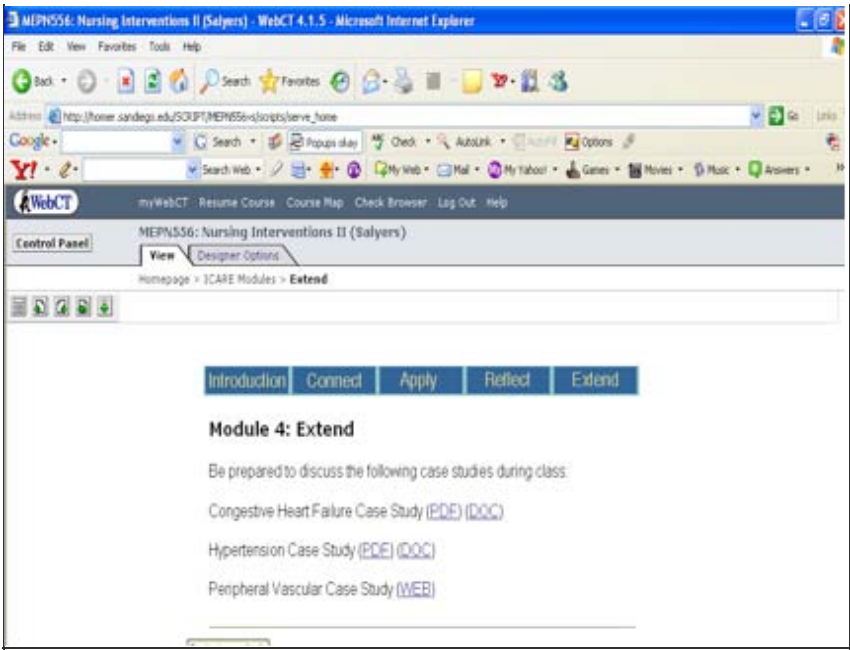
Apply



Reflect



Extend



Measures

At the end of the semester, students completed an end-of-course survey including 13-items developed by the authors. The survey used a Likert scale, ranging from strong disagreement (1) to strong agreement (5) for each item. The items addressed components of the course including satisfaction with the ICARE framework, quantity and quality of student-student and student-faculty interactions, creativity and flexibility in completing course assignments, as well as course format. Faculty completed a similar survey using the same Likert-scale rating approach. In their survey, faculty were asked to consider the ICARE framework as a means for structuring online course content. Two open-ended questions enabled students and faculty to comment on the advantages and disadvantages of taking a course that uses the ICARE framework through narrative. The end-of-course survey was completed by all participants (n = 37) and yielded high reliability (Cronbach's alpha coefficient = .88).

Results

Data analysis was conducted using SPSS version 17.0. Because of the ordinal level data obtained from the surveys, non-parametric Mann Whitney U analysis was conducted. Descriptive statistics, U and significance levels are reported in Table 1. Because there was no equivalent Q6 item for comparison between students and faculty, this item was not included in the data analysis. Cross tabulations for the entire sample (n = 37) yielded the following percent agreement for each question: Q1 = 83.78%; Q2 = 91.89%; Q3 = 56.76%; Q4 = 62.16; %; Q5 = 54.05%; Q7 = 78.38%; Q8 = 75.68%; Q9 = 67.57; Q10 = 64.86%; Q11 = 72.97; Q12 = 70.27%; and Q13 = 81.08%. For all survey items there were no significant (p < .05) differences in responses by students and faculty.

Table 1. Responses by Students and Faculty on End-Of-Course Survey

Survey Item	Mean (SD)		U	Sig.*
	Students (n = 29)	Faculty (n = 8)		
The Web-Enhanced Format (ICARE Modules, Blackboard, Video-Conferences and Monthly Onsite Visits) of the Course Facilitated Learning (Q1)	4.00 (.93)	4.25 (.71)	101.50	.599

The ICARE Modules Were Well-Organized and Facilitated Learning (Teaching) of Course Content (Q2)	4.38 (.56)	4.00 (.76)	83.00	.236
I Spent Too Much Time Learning the Technology (Q3)	3.31 (1.28)	3.63 (.92)	102.50	.625
I had Adequate Access to Technical Support (Q4)	3.45 (.95)	3.88 (1.36)	80.50	.194
Technical Issues Limited My Ability to Access Course Materials (Q5)	3.38 (1.18)	3.38 (1.51)	112.00	.899
I Would Take (Teach) Another Course Using the ICARE and Web-Enhanced Format (Q7)	4.00 (.80)	4.50 (.76)	75.00	.137
I Would Recommend this Course to Other Students (Faculty) (Q8)	3.90 (.72)	4.25 (1.17)	79.50	.182
The Course Provided Me with Creativity and Flexibility in Completing (Developing) Assignments (Q9)	3.80 (.82)	3.75 (.71)	109.00	.814
The Quality of Interactions Between Students and Faculty Was Sufficient to Meet Course Objectives (Q10)	3.55 (1.15)	3.75 (.46)	112.00	.899
The Quantity of Interactions Between Students and Faculty Was Sufficient to Meet Course Objectives (Q11)	3.72 (1.10)	3.75 (.46)	105.00	.704
As a Student Taking (Faculty Teaching) Courses at a Regional Campus, the Web-Enhanced Format of this Course Provided Me with an Adequate Alternative to a More Traditional Format (Q12)	3.83 (.85)	3.88 (.64)	115.00	.986
In General, I am Satisfied with My Overall Experience with this Web-Enhanced Course (Q13)	3.93 (.75)	4.25 (1.17)	80.50	.194

*Exact significance reported

Advantages and Disadvantages of Courses using the ICARE framework

The narrative responses of the students and faculty were read repeatedly, clustered, and coded for general themes related to advantages and disadvantages of courses using the ICARE framework. An advantage listed by students and faculty was that the ICARE framework facilitated ease of navigation through a module. Another advantage listed by both was that the framework provided flexibility for scheduling/structuring learning activities. A disadvantage listed by students and faculty related to difficulties with technology. Table 2 highlights general themes for both groups.

Table 2. Themes from Narrative Comments

Advantages of ICARE (Student Responses)	Advantages of ICARE (Faculty Responses)
Course material was available and accessible	Can be utilized with any learning management system
Provided flexibility to schedule learning activities*	Provided increased flexibility to structure online learning activities*
Decreased geographic and weather barriers	Provided for consistent design and layout
Provided ability to easily navigate through course*	Provided for ease of navigation in course*
Disadvantages of ICARE (Student Responses)	Disadvantages of ICARE (Faculty Responses)
Instructor may be less accessible	Challenges with finding something for each component of ICARE
Difficulties with technology*	Difficulties with technology*
	Unless all components of a module are required, students may not take full advantage of the learning opportunities

* Indicates shared perception

Discussion

Student and Faculty Perceptions of Courses Structured Using ICARE

In answer to the first research question, through non-parametric data analysis, it was determined that that there were no significant ($p < .05$) differences in student and faculty responses to items on the end of course survey for the two courses structured using the ICARE framework. Formative and summative program evaluation data collected prior to this study indicated that students from regional campuses sometimes felt marginalized, particularly when their courses were taught as web-enhanced or as fully online courses. This concern was compounded by the inconsistent structuring of courses.

The two medical-surgical courses evaluated for this study—both of which incorporated the ICARE framework—provided well-organized modules and effective learning experience for students. This finding was further reflected in end-of-course survey responses indicating that students would take, and faculty would teach, another web-enhanced course that used the ICARE framework, and that they would recommend the course they had been involved with. These findings are consistent with Salyers’ (2005) work evaluating the ICARE framework, and emphasize the importance of a pedagogical framework that is sufficiently structured to meet the learning needs of students in rural and remote areas who may have less access to f2f courses than their urban counterparts.

Due to the costs associated with supporting technology, students at the regional campuses had access to technical support only during regular business hours (9:00 a.m. to 5:30 p.m., Monday through Friday). In addition, there were instances when Blackboard at the main campus was not functional; this circumstance limited access to course materials and ICARE modules at regional campuses. Technological issues and access were highlighted by students and faculty in their narrative comments. Although technological and access challenges did occur, they did not affect student and faculty responses in a significant ($p < .05$) way.

While the ICARE framework is intended to provide ease of navigation and facilitate learning, ideas which were reflected by both students and faculty in the narrative comments, there is a learning curve. It would be important to monitor this variable once students have taken more than one course using the ICARE framework to determine if similar responses related to time spent on technology are obtained and to determine whether other challenges might emerge.

Overall Course Satisfaction

Regarding the second research question, through non-parametric data analysis, it was determined that that there were no significant ($p < .05$) differences in student and faculty satisfaction with the ICARE framework used to structure web-enhanced courses. Students and faculty agreed that, in general, they were satisfied with their overall experiences with the web-enhanced courses piloted in this study. As university budgets are stretched, faculty may be required to consider alternative strategies such as those that web-enhanced and fully online formats provide. Results from this study support the use of the ICARE framework as a means of structuring web-enhanced courses that are pedagogically effective and provide quality online learning experiences for students.

Advantages and Disadvantages of Courses Structured using the ICARE Framework

To answer the third research question, narrative responses to open-ended questions regarding the advantages and disadvantages of taking a web-based course structured around the ICARE framework were reviewed and general themes identified. Students and faculty indicated that the ICARE framework and e-learning format provided them with flexibility in scheduling learning activities. This flexibility was further validated on the end-of-course survey (Q9), with students and faculty indicating general agreement regarding this aspect of the course. The technological issues experienced by students and faculty may have affected creativity and flexibility somewhat, although not significantly ($p < .05$). Students and faculty shared the perception that their ability to navigate easily through the course was likely due to the ICARE framework.

Interestingly, a comment made by faculty suggested that they felt compelled to have a learning activity for each component (e.g., a Reflect and Extend component for each module). During course conversions and/or development, faculty were encouraged to utilize all ICARE components in order to provide consistent and meaningful learning activities to students. This led to additional work on the part of the faculty member. However, in order to respect faculty preferences, use of all components (Introduction, Connect, Apply, Reflect, and Extend) in course modules was strongly encouraged rather than required.

Post-ICARE Implementation Recommendations

To answer the fourth research question, comments from the Implementation Team and faculty were solicited. Based on these comments, several recommendations are offered. From a production point of view, the benefits of the ICARE framework include how easily it accommodates the launching of online course materials in contrast with other more costly and time-consuming conversions of them (e.g., converting Word documents to Acrobat in order to post them in the LMS platform, etc.). Additionally, in programs where there may be a pre-existing affinity to a particular approach or model, ICARE may be seen as an imposition threatening the creative freedom of faculty. In such cases, a strategy of recommending use of the framework is appropriate so that the faculty member has the right to decline if he or she is able to support their own their own design, development, and delivery needs.

During implementation, it became apparent to the Implementation Team that the eight faculty who piloted ICARE in their courses had variable levels of skill to design their courses in Blackboard. Some faculty were able to complete most tasks required to develop and launch a course, while others were more inclined to request that their courses be developed for them based on provided materials. Because of this variation, support for faculty was customized using a "highly relevant mentoring" (HRM) model with the goal of greater autonomy by the faculty member in course development over time. The key recommendations from the HRM model include three strategies: 1) train each faculty member to whatever level he or she is comfortable with course development, 2) take into account the level of faculty commitment to the development of course content when providing mentorship

(e.g., a faculty member who is teaching on a part-time basis may not want or need to learn course development in Blackboard) and, 3) use a hands-on approach when mentoring faculty by working with actual course materials rather than practice materials or artificial courses so that the learning experience is meaningful and productive at the same time. The HRM model should be extended to students so that they are able to work with the ICARE framework and navigate through modules as quickly as possible. In line with these principles, the faculty teaching the medical-surgical courses spent one class session orienting students to the ICARE modules and Blackboard learning environment.

Limitations

The limitations of this study were as follows. First, data collected from the surveys were self-reported and may have been subject to bias. Second, there were some technological difficulties throughout the semester that may have affected student satisfaction with the web-enhanced sections of their course. Third, because standardized instruments were not used to collect data, reliability of the results may have been affected. Finally, sample size was small ($n = 37$), and this may have affected the results. Regardless of these limitations, results from this study provide additional knowledge regarding satisfaction with courses structured using the ICARE framework from the perspectives of students and faculty.

Conclusions

F2f, web-enhanced, and fully online courses provide a wide cross-section of ways for engaging nursing students in innovative learning. Such strategies also provide opportunities for students in rural, regional and remote areas to maintain contact with contemporary professional knowledge. Students also benefit from access to the resources and communication possibilities that an LMS and other online technologies can provide. Faculty are able to organize and present relevant information for students in efficient, meaningful and effective ways. These strengths noted, change is not progress unless it can be demonstrated that user experiences are enhanced and that there is an improvement in educational practice.

Based on study findings, it is suggested that both faculty and students benefit when there is a pedagogical framework that reflects the general thinking and learning processes of the involved discipline—in this case, nursing. Because the ICARE framework does these two things, it holds potential for other nursing education settings, as well as for health education in general. Additionally, at a time when the delivery of health-related education has become a fairly sophisticated interplay of health, education, and technology, e-learning principles and practices that simplify and guide stakeholders are extremely valuable. Combining frameworks such as ICARE with human supports such as HRM assists in ensuring the success of the learning experience.

This research was conducted as a preliminary investigation into various aspects of online learning and the use of delivery strategies and pedagogical frameworks within post-secondary nursing education. Further research evaluating ICARE as a systematic approach to learning in related disciplines and professions, as well as the impact of web-enhanced formats on learning and teaching, is planned at various levels: campus-wide, multiple campus, and multiple university sites (national and international). Prospective and retrospective investigations are also planned. It is envisaged that this work will contribute to the developing quantitative and qualitative evidence that educators will use to understand and develop effective teaching strategies in e-learning environments.

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