Reflective Case Analysis 4: Lindsey Jenkins

Submitted By:

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1. Stakeholders

Stakeholder	Position	Primary Project Role	Primary Concern(s)
Dean	Dean of Academic Affairs at Brooks Health Science Center School of Nursing (SON)	Client	Redesign the school's core curriculum to focus on enhancing students' critical thinking skills
Dr. Barbara Miller	Associate Dean of Academic Affairs at Brooks Health Science Center School of Nursing (SON)	Project Sponsor	Improve SON's student performance on the National Council Licensure Examination (NCLEX) and meet national accreditation standards by redesigning the school's curriculum to focus on developing students' critical thinking skills
Lindsey Jenkins	Faculty-rank Instructional Designer	Lead Instructional Designer	Redesign and pilot the curriculum for two courses using case-based learning as the focus to develop students' critical thinking skills
Gina Smith	Professor of Acute and Chronic Nursing I	SME	Facilitate more efficient and productive student discussion to support case- based learning and evaluate student contributions using effective and reliable online collaboration tools
David Cunningham	Professor of Acute and Chronic Nursing II	SME	Find time to develop and incorporate case studies in the course and have students discuss them and do group work online without the technical issues that have plagued the current course management system

Jason Huang	Instructional Technology Specialist at SON	Systems Administrator	Provide sufficient IT support to faculty about the course management system and for all the free software programs that instructors are using to support their teaching online
Students	Nursing program students	Audience	Receive more support, better preparation for the NCLEX exam, and more opportunities for direct interaction with professors and fellow students

2. ID Challenges

Lindsey has been hired to redesign SON's blended format learning nursing curriculum to foreground the development of students' critical thinking skills. The curriculum redesign has become a priority since critical thinking skills have become the primary assessment focus of the NCLEX exam. Moreover, critical thinking skills development has been identified as a curriculum standard by the agencies accrediting SON's program and the overall Health Science Center. Lindsey's curriculum redesign will be piloted on two courses and ultimately rolled out to the entire undergraduate core curriculum. Lindsey has also been tasked with designing an evaluation plan to measure the results of the pilot courses to provide feedback to inform the implementation of the redesigned curriculum on a larger scale and to provide demonstrable evidence of student improvement of critical thinking skills to the relevant accrediting bodies.

After speaking with Dr. Barbara Miller, associate dean of academic affairs at Brooks Health Science Center School of Nursing, and learning more about the specifics of the redesign, including the decision to use case-based learning as the primary pedagogical approach, Lindsey met with the two professors who will be piloting the redesigned courses to collect information and solicit feedback about how they are currently teaching the course. Lindsey will use the information collected during this meeting to conduct a more in-depth analysis of what will be needed to identify and address the aspects of the program, instructors, students, and curriculum that Lindsey will need to take into account when redesigning the curriculum. Accordingly, Lindsey's key ID challenges will fall within both the analysis and design stages of the ADDIE model.



Lindsey's specific ID challenges are as follows:

ID Challenge 1: Design a curriculum that focuses on development of critical thinking skills and that can be delivered online using a case-based learning approach.

Because a case-based approach has already been implemented to some extent in the courses to be piloted and, based on student evaluations, did not yield overly positive results, Lindsey will need to collect information and analyze feedback from teachers and students about the course and make design adjustments to account for the instructional and technological issues identified in the feedback.

ID Challenge 2: Design an evaluation plan to measure the extent to which learner improvement in the area of critical thinking skills has occurred and whose results can be used to modify the redesigned curriculum for a larger scale rollout.

In her redesign of the curriculum for the two pilot courses, formative assessment on the course content will need to be accounted for. However, Lindsey will also need to incorporate a means to evaluate students both before and after the course to demonstrate tangible gains in learner improvement in critical skills development.

Case-Specific Constraints

There are several case-specific constraints that Lindsey will need to address in the redesign of the curriculum and the piloting of the two Acute and Chronic Nursing courses.

Constraint 1:

The online course management system used to deliver the piloted courses has limited instructional tools.

Online discussion and collaboration in the courses to be piloted were previously hampered by limited functionality of the course management system used to deliver SON's online courses.

Challenge: Will Lindsey be able to design an effective case-based curriculum that emphasizes student discussion and collaboration with the current course management system and its limited tools?

Constraint 2:

Large course enrollment sizes.

Incorporating a case-based learning approach requires a certain level of discussion and interaction between students and the instructor, the dynamics of which become more challenging when scaled to large classes, regardless of the instructional mode (online, on-the-ground, blended).

Challenge: Will Lindsey be able to design an effective case-based curriculum that facilitates productive discussion and meaningful interaction in classes with large enrollments?

Constraint 3:

Limited technical support for the course management system.

Current IT support is overwhelmed by faculty requests and questions about how to use non-native software applications with the course management system.

Challenge: Will Lindsey be able to incorporate sufficient scaffolding into the course design both to enhance the level of discussion and interaction among students and the instructor and reduce the number of inquiries resulting from the use of the course management system and any related technology issues?

Constraint 4:

Using case-based learning as the primary pedagogical approach, which requires significant instructional scaffolding for both teachers and students.

The decision to use case-based learning as the primary pedagogical approach for the curriculum design was made before Lindsey was brought on to the project. Despite the somewhat uneven implementation and student evaluation results of the two courses that will be piloted, case-based learning, with its focus on critical thinking skills development, appears to be

an effective pedagogical approach for this type of program both to promote mastery of content knowledge and to develop the critical thinking skills students will need to score well on the NCLEX exam (Henning, Nielsen, & Hauschildt, 2006).

Challenge: Will Lindsey be able to design an effective pedagogical and technical framework to incorporate case-based learning and its key components (discussion and application) in a blended learning environment?

Constraint 5:

Instructors' affective issues using online instructional technology.

Gina and David found it difficult and frustrating to use the course management system to support their courses, which resulted in minimal student interaction and unproductive discussion of the course content.

Challenge: Will Lindsey be able to mitigate Gina and David's reluctance, uncertainty, and frustration with using online instructional technology by providing them with strategies to help them develop productive activities that facilitate online discussion and interaction between students and the instructor?

Based on these specific ID challenges and the case-specific constraints that Lindsey must address, I have prioritized the design challenges and case-specific constraints as follows:

#	Challenge/Constraint	Туре
1	Design a curriculum that focuses on students' development of critical thinking skills and that can be delivered online using a case-based learning approach.	ID Challenge 1

2	Using case-based learning as the primary pedagogical approach, which requires significant instructional scaffolding for both teachers and students.	Case Constraint 4
3	Instructors' affective issues using online instructional technology.	Case Constraint 5
4	Large course enrollment sizes.	Case Constraint 2
5	The online course management system used to deliver the piloted courses has limited instructional tools.	Case Constraint 1
6	Limited technical support for course management system.	Case Constraint 3
7	Design an evaluation plan to measure the extent to which learner improvement in critical thinking skills has occurred and whose results can be used to modify the redesigned curriculum for a larger scale rollout.	ID Challenge 2

I have ranked the first ID challenge as the top priority precisely because Lindsey has been brought on to redesign the curriculum to emphasize the development of critical thinking skills. The constraint I ranked as priority 2 is not so much a constraint in terms of case-based learning's being chosen as the main approach before Lindsey came on board, but because case-based learning requires extensive support mechanisms for such a constructivist approach to be effective. Incorporating case-based scaffolding, including opportunities for students not only to discuss the material, but also have the chance to apply it, becomes more challenging in an online environment. Thus, Lindsey will next need to address the instructors' affective issues with online technology (constraint 5). Because of the teachers' lack of knowledge and experience dealing with a course management system and its tools, as well as their lacking effective strategies to facilitate discussion and provide feedback in an online environment, Lindsey will need to provide instructional design support so that the teachers have confidence in using the online technology to facilitate meaningful interaction, productive collaboration, and effective learning. By addressing this constraint, Lindsey will also be able to address the constraint as it applies to students because the scaffolding Lindsey will create to support instructors will also provide support for the students, who will be largely working online at their own pace. The instructional design and strategies that Lindsey uses to address constraints 4 and 5 will also help mitigate the issue of large class sizes (constraint 2). Although it would be ideal to have three or four sessions of each course to maximize student production, it may not be a practical option. Accordingly, Lindsey will need to ensure that her design choices and the instructional and class management strategies that can be used to effect these choices are scalable to accommodate large classes.

I have prioritized constraints 1 and 3 next because both can be addressed by focusing on the course management system. Feedback from Gina, David, and SON's Instructional Technology Specialist, Jason, has revealed the course content management system is limited in its tools and has resulted in teachers' looking for ad hoc solutions. This, in turn, has created IT support issues. Lindsey will need to decide if the current course management system is sufficient to meet the pedagogical needs of the redesigned curriculum and instructors.

After addressing constraints 1–5, which Lindsey will need to consider in her curriculum redesign to help develop students' critical thinking skills to the level expected by the stakeholders, Lindsey will be able to design an evaluation plan (ID Challenge #2) that measures the extent to which learner improvement in critical thinking skills has occurred and whose results can be used to modify the redesigned curriculum for a larger scale rollout.

3. Application of Readings/Experiences to Case Study

How did the week's assigned readings contribute to your analysis?

This week's readings were helpful both in identifying possible issues with incorporating case-based learning in a blended environment as well as how to organize and execute student

discussion and collaboration; this way, learners are productive and at the center of the process, as opposed to the instructor, who in a more traditional format plays the role of "sage on the stage."

Specifically, I found the "bowtie mode" described in Henning et al. (2006) helpful in structuring the discussions in the online component (framing discussion) and in the face-to-face sessions (conceptual and application discussions). Their identifying different coding categories gave me some ideas as to how to make the discussions more student-to-student, which could help instructors mitigate the large class issue for the pilot courses.

Ellis, Marcus, and Taylor (2005) highlighted an issue with case-based, blended courses that I hadn't thought about, namely that the differences in an online mode of learning and a face-to-face mode can potentially create issues of "incoherence" unless students are oriented to using online resources to support the case analysis. In Kaddoura (2011), I found one of the guidelines for effective use of case studies to be particularly important: "the learning environment needs to be open, safe, and nonthreatening to facilitate students' participation" (p. 5). Lowering that affective filter, particularly in the face-to-face sessions, is one of the instructor's top priorities, especially because case studies are not designed to yield a singular solution. Thus, students need to feel free to put forth their ideas. Without this open environment, class discussion and collaboration will be stunted, which undermines the very nature of a case study-based approach.

How did your previous experiences contribute to your analysis?

Several years ago, I was contracted to develop an online real estate prelicense course for a client who wanted to offer it to potential real estate sales agents in a specific state. The course had to be approved by the state real estate commission. Once the commission approved the course, learners could complete the course and submit a certificate of completion to demonstrate proof of training, which would fulfill the first part of the real estate sales agent licensing requirement. The second requirement was that the prospective sales agent had to pass the real estate license exam. The real estate commission required course providers such as my client to maintain a minimum 60% overall passage rate for those who completed the prelicense course.

I found my experience designing the prelicense real estate course somewhat analogous to Lindsey's situation. The NCLEX is a licensing exam whose results have implications for the school's accreditation, as a certain percentage of students will need to pass the exam. At the same time, Lindsey will need to find a way to balance the score requirement with the course content and skills students will need while they're out in the field.

When designing and developing the prelicense course, I had to ensure that the course focused on the material that would be tested on the examination. The client, who also functioned as the SME and the instructor for the course, provided materials that he had used to train real estate agents in seminars and wanted to organize the course around that content. When I reviewed the client's content, it read like a lot of "nice to know, but not need to know" anecdotal information. To find out more about what was emphasized on the exam, I obtained a list of exam topics from the commission and the weight of each topic with respect to the overall number of exam questions. With the client's buy-in, we structured the course around these topics (and their weight) to ensure that they aligned with the areas of knowledge tested on the licensing exam. The client's video lectures for the course were designed to cover the specific concepts, items, and terms associated with each topic covered on the exam. Moreover, we ensured that the test questions in the course mirrored the state exam questions in format (multiple choice) and specific Bloom's taxonomy of cognitive levels (knowledge, comprehension), which helped us focus on the content of the test questions and avoid the trivia that can creep into test questions and

responses. Because the course content aligned with the licensing exam, and because the assessment components mirrored the exam format, the client met the real estate commission's 60% passage rate requirement.

4. Possible Solutions

To implement the case-based learning approach selected for the curriculum revision as the main pedagogical approach to develop students' critical thinking skills, Lindsey must ensure that course materials, instructional scaffolding, and the technology used to deliver the course online fully support the ill-structured nature of this learner-centered approach. Due to the likely large enrollment numbers of the two courses that will be piloted, Lindsey will also need to design evaluation instruments for teachers to use to provide meaningful formative feedback. These instruments should also ensure that students are assessed in a manner that both measures the extent to which they have met the learning outcomes for the course and prepares them to achieve satisfactory scores on the NCLEX exam. Finally, Lindsey will need to design an evaluation plan that demonstrates the extent to which the revised curriculum of the two pilot courses has developed students' critical thinking skills and can identify any areas for revision before the curriculum redesign is rolled out for the rest of the core courses.

Below are two solutions that attempt to account for these issues.

Solution 1

Each piloted course will be structured into two components: an asynchronous online component and a series of live, face-to-face sessions. The asynchronous online component, which will be delivered by SON's current course management system, will have students work through a case study and supporting materials at their own pace, though still within the

timeframe of the number of weeks allocated for each case study. A wide range of case study supportive content and resources will be provided to illuminate different aspects of the case. The case study will be framed by a discussion designed to trigger students' interest in the topic and activate any background knowledge they may have about the case's issues (Ellis et al., 2005). This preliminary discussion would be moderated online by the instructor in a designated forum accessed through the course management system.

For the live course component, there will be six face-to-face sessions, which is the same number of face-to-face sessions currently allocated. The first face-to-face session will be a course orientation in which students can meet one another and the instructor. This session will also be spent reviewing the course's methodology, the nature of case-based learning, and specific guidelines on how to complete the case-study reports (Ellis et al., 2005). The session will also review the expectations for group discussions in the face-to-face sessions. By completing this orientation session, students will be better prepared to engage in the material and use the provided online resources to work through the cases autonomously so that the students' experiences in the online learning component align with their experiences in the face-to-face sessions; this alignment between the two learning modes will hopefully mitigate that incoherence that Ellis et al. found characteristic of blended learning experiences and result in "a more holistic meaningful learning" (p. 240). The remaining five face-to-face sessions will be designated as group interventions in which the main concepts, issues, and possible solutions to the problems raised in the case study are discussed in more depth as a whole class and in groups, with the instructor facilitating the discussion.

To ensure that students are assessed on the concepts and issues raised in the different cases, a series of formative tests will be administered. Exams that had originally been designated

to take place during the five face-to-face sessions will be administered online through the course management system. Test questions, which will be aligned with the "application" level of Bloom's taxonomy, will mirror those asked on the NCLEX exam both in terms of format (multiple choice) and content (authentic situations that assess students' critical thinking skills). To ensure academic integrity, exam questions will be randomly pulled from a large bank of test questions, with answer choices that are likewise randomized when the student logs in to take the test. Once the student completes the test, the course management system instantly marks it, providing a score as well as detailed remediation for each question answered correctly or incorrectly. To assess that students have identified the main elements of each case study and any related issues, a final case review, in which the student answers a series of guided questions about the case, will be submitted online and graded by the instructor following a set rubric. A final component of the course assessment is the students' overall participation in the online discussions, which is likewise graded following a general rubric. There is no assessment for the face-to-face sessions, though the facts, details, and issues discussed about the case will inform the questions asked on the final case review that the student will submit.

To determine the extent to which the piloted courses have succeeded in improving student performance in the area of critical thinking skills development, as well as to identify any areas of the curriculum that need revision or enhancement, formative and summative evaluation, both quantitative and qualitative, will be performed. To determine a baseline level of performance, a pre-test will be administered to students and, at the end of the course, a post-test consisting of a number of questions drawn from the same bank of test questions will be administered. A comparison of both scores will be used to demonstrate any improvement in the area of critical skills development. Other formative evaluation to identify any areas of the curriculum that need revision or enhancement would include a Level 1 "reaction"-type evaluation completed by both students and teachers. For teachers, an evaluation would get them to provide a critical and reflective analysis of how they have been able to facilitate a case-based blended course using the redesigned curriculum and supporting materials. Likewise, students would evaluate the course at varying points with evaluation instruments designed to probe their reactions to aspects of the case-based format and identify any areas in which the course approach, format, or goals are not clear, either for the online component, the face-to-face component, or both. A final summative quantitative and qualitative analysis of all completed evaluations can then be analyzed to identify any modifications that might need to be made before the rollout of the curriculum redesign for all of the core courses.

This solution addresses the design challenges and the constraints associated with the project in the following ways:

Challenge/Constraint	How Challenge/Constraint Is Addressed
Challenge/Constraint ID Challenge 1: Design a curriculum that focuses on students' development of critical thinking skills and which can be delivered.	How Challenge/Constraint Is Addressed The blended course format facilitates the features and requirements of a case-based learning approach. Because a case-based learning approach is constructivist and typically does not have a singular solution, it requires both extensive scaffolding of material and ongoing discussion to position the student to work independently through the various aspects of a case.
focuses on students' development of critical thinking skills and which can be delivered online using a case-based learning approach.	through the various aspects of a case.Likewise, case-based learning promotes a high degree of reflection, so students need to be able to work through the material at a pace that allows them to analyze and evaluate case elements to arrive at quality solutions to issues or identify applications of the findings.With the online component, students work through a case study and supporting materials

	content designed to illuminate different aspects of the case and framed by an online discussion designed to activate the students' knowledge. In face-to-face sessions, students interact and collaborate with other students to discuss the case in applied settings while the instructor actively facilitates (Henning et al., 2006). Taken together, both modes can create that "open, safe, and nonthreatening" space that Kaddoura (2011, p. 5) identified as a principal guideline of an effective case-based approach.
Case Constraint 4: Use case-based learning as the primary pedagogical approach, which requires significant instructional scaffolding for both teachers and students.	Delivering case-based learning in an online format allows for a range of supporting case elements to be included, such as <i>realia</i> , video microlectures created by the instructor, audio testimonials from practitioners dealing with similar situations to foreground the authenticity of the issues or situations of the case, and supplementary written materials providing a more technical elaboration of key concepts implicated in the case study. Navigation among the materials can be facilitated by hyperlinks. For the face-to-face interaction sessions, discussion models like the "bowtie model" can be used to help the instructor structure the case discussion into discrete sections that support different stages of the case study module (Henning et al. 2006)
Case Constraint 5: Instructors' affective issues using online instructional technology.	Because the curriculum redesign will use the same course management system currently used to deliver the course that will be piloted, teachers won't have to learn yet another system. Because the blended schedule includes five face-to-face discussion and collaboration sessions, trying to incorporate ad hoc online programs like a wiki with the course management system won't be necessary. Additionally, Jason, SON's instructional technology specialist, can compile support issues already resolved into a robust FAQ section on the course management section and provide reference guides for setting up certain

	parts of the course, such as discussion forums. Moreover, using best practices and accepted pedagogical models to structure student discussion and collaboration, such as the "bowtie model" and the six-step small group discussion model developed by Stepien et al. (Henning et al., 2006) can help instructors structure discussions into more manageable segments.
Case Constraint 2: Large course enrollment sizes.	Although it would be ideal to have several different course sessions, or even to have several face-to-face discussion sessions to lower the instructor-to-student ratio, using best practice discussion techniques both online and in the face-to-face sessions can still make the discussion sessions more manageable even with a larger number of students. For example, using what Henning et al. (2006) referred to as higher-level questions and getting students to take more control of the discussion by asking fewer teacher-initiated questions can increase student-to-student interaction, which can be further enhanced in group dynamics guided by the specific steps of a discussion model, such as Stepien et al.'s case analysis discussion model (Henning et al.).
Case Constraint 1: The online course management system used to deliver the piloted courses has limited instructional tools.	This solution, which integrates five face-to- face sessions in which students discuss and collaborate in person, eliminates the need to incorporate outside tools such as a wiki to collaborate online. Since the course management system already has a discussion forum, this can be used for the framing and conceptual discussions, which would set up the application discussions in the face-to-face sessions.

Case Constraint 3: Limited technical support for course management system.	Keeping the online tools simplified and limited to the ones teachers have used previously and creating a guided tour of the course management system, a robust FAQ, and response templates with stock solutions and illustrations to resolve common issues that can be provided to teachers (and students) is intended to greatly reduce the amount of time spent handling technical issues and increase the faculty's knowledge of the course management system to the point that they are able to troubleshoot issues on their own.
ID Challenge 2: Design an evaluation plan to measure the extent to which learner improvement in critical thinking skills has occurred and whose results can be used to modify the redesigned curriculum for a larger scale rollout.	To focus on identifying any increase in performance and the development of critical skills for students in the two pilot courses, a pre-test consisting of questions similar in format to the NCLEX exam and covering areas of content addressed in the piloted courses will be administered to students and marked by the course management system (though students will not see the results). A post-test administered at the end of the course consisting of a number of questions drawn from the same bank of test questions will be administered and marked by the course management system. While the pre-test and post-test scores will not factor into the students' final grade for the pilot courses, a comparison of both scores will demonstrate potential improvement critical thinking skills development. A final summative quantitative and qualitative analysis will be conducted on the final exam results, along with the Level 1 feedback provided by students and the instructors, to identify any modifications that might need to be made before the rollout of the curriculum redesign for all of the core courses.

Solution 2

Each piloted course will retain the same blended structure and components referenced in solution 1: an asynchronous online component and a series of live face-to-face sessions. As also proposed in solution 1, the asynchronous online component will have students work through a case study and supporting materials at their own pace, though still within the timeframe of the number of weeks allocated for each case study. A wide range of case study supportive content and resources will be provided to illuminate different aspects of the case. However, case study discussion will take place entirely online, so not only will the framing discussion be facilitated online, but also the other two parts of the bowtie model, the conceptual discussion and the application discussion (Henning et al., 2006) will take place online. Because the application discussion requires active collaboration among students, a new course management system with a range of collaborative tools, such as a wiki, a blog, and a debate module, would need to be licensed to deliver the course. All discussions will be facilitated by the instructor online. Students will also receive a final discussion grade based on overall participation in the discussions; the teacher will determine this grade using a general rubric that accounts for both the quality of posts and a range of quantitative metrics, such as the number of discussion posts, the regularity of posts, and the average length of posts.

For the live course component, there will be six face-to-face sessions, which is the same number of face-to-face sessions currently allocated in the courses to be piloted. As proposed in solution 1, the first face-to-face session will function as a course orientation in which students meet one another and the instructor. This session will also be spent reviewing the course's methodology, the nature of case-based learning, and specific guidelines of how to complete the case-study reports (Ellis et al., 2005). The remaining five face-to-face sessions will retain the examination function currently designated in the courses to be piloted. The exams, which are

aligned with the case studies, assess students on their understanding of key terms and concepts from the case studies. To get to students to apply their critical thinking skills, the exam also asks students to reflect critically on the case and provide a solution to a related hypothetical case scenario. The instructor will mark the exams using a standard answer key for the terms and concepts section, which are more objective, and a rubric to evaluate the sections that require the student to reflect critically on the completed case and apply a solution to a related scenario. These exams will comprise the main component of the students' final grade.

To determine the extent to which the piloted courses have succeeded in improving student performance in critical thinking skills development, as well as to identify any areas of the curriculum that need revision, formative and summative evaluation, both quantitative and qualitative, will be performed. To determine a baseline level of performance, a standardized critical thinking skills test such as the California Critical Thinking Skills Test (CCTST), which was developed based on the input of 46 national experts (Kaddoura, 2006), will be administered online to students at the beginning of the course (though students will not see the results). Because the CCTST exam is adaptive to different fields, the health science version of the exam would be given to students. At the end of the course, the students will take the exam again, though with questions and answers randomized; a comparison of both scores will be used to demonstrate any improvement in the area of critical thinking skills development.

As with solution 1, other formative evaluation to identify any areas of the curriculum that need revision or enhancement would include a Level 1 "reaction"-type evaluation completed by both students and teachers. For teachers, an evaluation would get them to provide a critical and reflective analysis of how they have been able to facilitate a case-based blended course using the redesigned curriculum and supporting materials. Likewise, students would evaluate the course at varying points with evaluation instruments designed to probe their reactions to different aspects of the case-based format and identify any areas in which the course approach, goals, or format are not clear, in particular for the online component because the bulk of the course content and discussion will occur online. A final summative quantitative and qualitative analysis of all completed evaluations can then identify any modifications that might need to be made before the rollout of the curriculum redesign for all of the core courses.

This solution addresses the design challenges and the constraints associated with the project in the following ways:

Challenge/Constraint	How Challenge/Constraint Is Addressed
ID Challenge 1: Design a curriculum that focuses on students' development of critical thinking skills and which can be delivered online using a case-based learning approach.	The blended course format facilitates the features and requirements of a case-based learning approach, which requires extensive scaffolding of material and ongoing discussion to position the student to work independently through the various aspects of a case. Likewise, case-based learning promotes a high degree of reflection, so students need to be able to work through the material at a pace that allows them to analyze and evaluate case elements to arrive at quality solutions to issues at quality solutions to issues or identify applications of the findings. Accordingly, the online component in this solution is heavily emphasized so that students can work through a case study and supporting materials at their own pace as well as interact and collaborate with other students. Because discussion is carried out exclusively online, some students may find that a virtual space is even more "open, safe, and nonthreatening" (Kaddoura, 2011. p. 5) than the live face-to-face space suggested in solution 1, in which the majority of the discussion about the case studies would take place.

Case Constraint 4: Use case-based learning as the primary pedagogical approach, which requires significant instructional scaffolding for both teachers and students.	Because the courses to be piloted are blended and include an online component, a high level of scaffolding can be created for the case study itself (supported by hyperlinked <i>realia</i> , video microlectures created by the instructor, audio testimonials from practitioners, and supplementary written materials providing a more technical elaboration of key concepts illustrated in the case study) and for the discussions. Rubrics can be provided for students to know discussion expectations, areas in which they will be assessed, and examples of effective posts, as well as examples of posts that would not meet course expectations in terms of format or content.
Case Constraint 5: Instructors' affective issues using online instructional technology.	The course management system currently being used by teachers appears to be limited in its functionality, so teachers attempting to incorporate ad hoc online programs like a wiki will always run into problems, particularly if they are not proficient with setting up and using online applications. Licensing a new course management system such as Canvas or NEO, which are streamlined with a range of collaborative features and are designed to be used by a non-expert, to deliver the piloted course can greatly reduce the frustration and anxiety that teachers such as David have felt. These newer course management systems also come with a robust help section and usually have a premium support section, which Jason, SON's instructional technology specialist, can access if he has an issue that he cannot resolve from his side.

Case Constraint 2: Large course enrollment sizes.	Like solution 1, this solution has avoided proposing several different course sessions to accommodate the large enrollment that the courses to be piloted have previously experienced. Because the bulk of the curriculum redesign for the piloted courses takes place online, large course enrollment size can be mitigated to some extent. Moreover, using best practices and accepted pedagogical models, such as the "bowtie model" and the six-step small group discussion model put forth by Stepien et al. (Henning et al., 2006), will help instructors structure online discussions into more manageable segments.
Case Constraint 1: The online course management system used to deliver the piloted courses has limited instructional tools.	This solution proposes licensing a new course management system such as Canvas or NEO, which feature a range of tools that promote online collaboration, such as a wiki, a blog, and a debate function.
Case Constraint 3: Limited technical support for course management system.	This solution proposes licensing a new course management system such as Canvas or NEO, which include a robust knowledge base system and premium support that both teachers and Jason can use to troubleshoot any issues.
ID Challenge 2: Design an evaluation plan to measure the extent to which learner improvement in the area of critical thinking skills has occurred and whose results can be used to modify the redesigned curriculum for a larger scale rollout.	To focus on identifying any increase in performance and the development of critical skills for students in the two pilot courses, a standardized critical thinking skills test such as the California Critical Thinking Skills Test (CCTST) will be administered online to students at the beginning and end of the course. A comparison of the scores will be used to demonstrate any improvement in the area of critical skills development. Along with the Level 1 feedback provided by students and the instructors, a final summative quantitative and qualitative analysis will be conducted to identify any modifications that might need to be made before the rollout of the curriculum redesign for all of the core courses.

5. Pros and Cons

Solution 1 Pros

Pro	Result
More face-to-face discussion time is given for students.	With the online component, students work through a case study and supporting materials at their own pace. With five scheduled face- to-face sessions, students have ample opportunity to interact and collaborate to discuss the case in applied settings and more actively negotiate solutions than they would responding in an asynchronous online discussion forum.
Teachers may feel more comfortable leading class discussion in a live setting.	For teachers like David, who are more comfortable facilitating discussion in a live setting, having all of the course discussion take place online may be frustrating because of technical issues or a lack of confidence in being able to generate meaningful, ongoing discussion as a result of the asynchronous nature of online discussion. Teachers like David may feel they are better able to implement a range of effective facilitation strategies on the fly to increase learner-to- learner discussion when they can "see" the discussion happening.
Fewer likely technical issues are likely with the course management system.	This solution assumes using the same course management system to deliver the revised courses as was used to deliver SON's courses previously. Because the curriculum will not incorporate features that the course management system does not have, such as a wiki, IT won't be expending resources troubleshooting teachers' use of applications that are not native to the course management system. Likewise, the more teachers and students become comfortable with the functionality of the course management system, the fewer the technical issues that will likely need troubleshooting.
Course exams mirror NCLEX format.	Because NCLEX results are central to measuring a student's level of competency coming out of the program, it is crucial to assess the student in a way that mirrors NCLEX test questions in terms of both format and content. With assessments that have a fidelity to the exam, students can feel confident that their performance in the course

will be good predictor of how they will do on
the NCLEX exam, which is one of the student
concerns indicated in previous course
evaluations. Course exam results can also be a
concrete indicator for teachers and the
administration of the extent to which
students' critical thinking skills are being
developed in the courses.

Solution 1 Cons

Con	Result
Students won't be able to collaborate online.	By using the current course management system, which does not have a wiki collaboration tool feature, student collaboration online will likely not be possible. Because the bulk of the blended course is structured to get the student to work through modules independently, collaboration online won't be available as an instructional technique. This lack of learner-to-learner interaction online could lead to students feeling isolated from each other.
Having more face-to-face discussions requires more classroom management.	Because class enrollment is likely to be large, the five face-to-face sessions, which are dedicated to application discussions, could result in the teacher's needing to facilitate a number of different discussions among different groups. A teacher less experienced than David, for example, might have difficulties managing the different groups and employing an effective repertoire of questioning strategies, which could result in unfocused or unproductive discussion.

Solution 2 Pros

Pro	Result
Replacing the course management system currently being used with one that would have more features and tools to promote online learner-to-learner collaboration.	Leveraging different collaborative discussion tools such as a wiki will create a more constructivist learning experience; group work using collaborative tools will facilitate more negotiation of learning than is possible in a standard discussion forum.

With course discussion occurring primarily online, there will potentially be fewer classroom management issues.	As teachers will not have to worry about managing students in a live environment, they can focus more on actual discussion output and providing a wide range of feedback, which may not always be possible in a face- to-face setting if time is spent organizing and managing groups of students to keep everyone productive and on task.
With the main course materials and discussion being accessed online, and with only the exam sessions conducted in a face- to-face environment, students will not have to adapt to two different modes of learning.	Ellis, Marcus, and Taylor (2005) have found that for courses that are blended in format, there can be a sense of incoherence created between the two formats if students are not oriented as to how to make use of the resources for the online component of a blended course. This incoherence can prevent holistic and meaningful learning. By having the bulk of the course delivered and facilitated online, students can focus more on the content of the course rather than on becoming accustomed to one mode and then having to switch to the other (e.g., face-to-face discussion), as proposed in solution 1.

Solution 2 Cons

Con	Result
Teachers will need to be trained in how to use the new course management system.	With any new technology, there will need to be hands-on training for not only students and teachers but also SON's instructional technology specialist and his staff. Moreover, due to the reluctance teachers like David may have toward using technology and needing to learn a new course management system all over again, there may be some affective issues (anxiety, frustration) that impede the training, which can result in a not-so-smooth implementation of the pilot courses.
Because the discussion will occur online, there will be a great deal more written moderation and feedback required from the teacher.	The large enrollment sizes and importance of not only providing feedback in the discussion but also facilitating it with cues, elicitation questions, and recaps can be more time- consuming for the teacher than facilitating discussion verbally in a face-to-face environment.

Because the live component of the course has been designated for exams, there will be little face-to-face discussion time.	Some students and teachers may prefer the live mode for discussions because interaction and feedback are more immediate. Teachers who are not as comfortable with technology or confident in their ability to use it to moderate effective discussions may also feel that they are limited in their ability to facilitate meaningful discussion about the case elements.
There will be little overt practice with NCLEX-type exam questions.	Due to the holistic nature of the exams scheduled for the face-to-face sessions in this solution, only a small section of the exam could be multiple-choice, which would mirror the NCLEX test format but may not necessarily mirror the content.

6. Final Recommendation

My final recommendation is to use Solution 1. The asynchronous online component, which will be delivered by SON's current course management system, will have students work through a case study and supporting materials at their own pace, with a single framed discussion moderated by the instructor in a designated forum that can be accessed through the course management system. Minimizing the online discussions will eliminate the need to use nonnative applications such as the wiki, and student-to-student collaboration will occur in the other component of the blended format, the face-to-face sessions. The first face-to-face session functions as a course orientation in which the teacher will review the methodology of the course and the nature of case-based learning. The remaining five face-to-face sessions are designated as group interventions in which the main concepts, issues, and different possible solutions to the problems raised in the case study are discussed in more depth as a whole class and in groups, with the instructor facilitating the discussion. Conducting discussions in the face-to-face sections also creates another potential advantage—the comfort factor, for both teachers and students. For teachers like David, having all of the course discussion take place online may be frustrating, either due to technical issues or a lack of confidence in being able to generate meaningful, ongoing discussion as a result of the asynchronous nature of online discussion. As indicated in the course evaluations, students remarked about the inability to have questions answered and to interact with other students. Conducting the main discussions in a face-to-face setting mitigates these issues.

Another advantage to Solution 1 is the emphasis on the NCLEX exam. Because the NCLEX exam and SON's trend of declining student results on the exam are specifically identified by stakeholders as an issue that is to be addressed by the implementation of case-based learning into the curriculum to help foster the development of students' critical thinking skills, Solution 1 accounts for NCLEX-style exam questions in the assessment portion of the course. Administered online through the course management system, course test questions will mirror those asked on the NCLEX exam both in terms of format (multiple-choice) and content (authentic situations that assess students' critical-thinking skills). Course test results can later be used to compare students' NCLEX exam results with course performance to identify how well students are being prepared for the NCLEX exam.

One con is that students will not be able to collaborate online because the current course management system used by SON does not have a wiki collaboration tool feature. Moreover, because the bulk of the online component of the blended course is structured to guide the student to work through modules independently, the lack of learner-to-learner interaction online could lead some students to feel isolated from the class. However, because the structure of the course for this solution incorporates five face-to-face sessions in which students will have ample opportunities to interact and collaborate with one another, any isolation a student might feel would not be chronic. Moreover, the online component does have a framing discussion for each

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case study, so students will be able to visit the discussion board with other students and exchange ideas.

Another con related to the face-to-face discussion sessions is that the instructor will need to use effective classroom management strategies to deal with both the large number of students and the need to make the discussion sessions productive. One way to mitigate potential issues is to ensure that teachers are using a repertoire of questioning strategies as well as structuring the discussion session into discrete parts that have specific goals using a case-based discussion model, such as Stepien et al.'s six-step process as a framework.

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