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IDT500

10 December 2017

To Fix or To Accept

This paper presents a potential solution to Case Study #13 found in The ID CaseBook – Case Studies in Instructional Design (Ertmer 136). In this case Dr. Lindsey Jenkins, who holds a Ph.D. degree in instructional design and technology, is being asked to update the curriculum at the Brooks Health Science Center School of Nursing (which will be referenced moving forward as "SON"). She has been with the SON for exactly one month and she is now sitting to recall the events that have taken place over that month. This paper sets out to design a plan that will evaluate where the current curriculum is, what needs to be enhanced, what needs to be added and what is useful as it is.

The root of the problem is that students at the SON are not performing well when they attempt the or National Council Licensure Examination (which will be referenced moving forward as "NCLEX"). There has also been a steady increase of negative feedback on the student opinion survey. Barbara Miller, the associate Dean of Academic Affairs, has hired on the previously mentioned Instructional Designer, Lindsey Jenkins, to address the problem. This solution will evaluate with a pilot program for two of the classes in the nursing course work at SON; Acute and Chronic Nursing I & II.

While the Associate Dean of Academic Affairs at the SON is requesting the curriculum redesign at the school she mentions that there is a strong need for evidence of improvement that can be presented to accreditation bodies (Ertmer 139). The fact that the Dean even mentioned accreditation implies that the school is in danger of loosing accreditation if they do not take action to improve the curriculum. This is never stated directly so it has not been added to the list of goals and objectives but accreditation will be considered a motivational factor for the curriculum redesign.

Two primary track-able changes have been identified that will provide evidence of the success of the pilot program. First, that when students attempt the NCLEX they should achieve an average score of seventy percent (70%) or higher. Second, the student engagement survey has indicated that students are not satisfied with the education they have received. They are submitting feedback that states the coursework does not prepare them for the exam. There needs to be a change in the response the students give on the survey to predominantly positive answers claiming the coursework accurately prepared them for the NCLEX exam (Ertmer 137).

The most appropriate means for bring about the desired change is better-structured instruction; Instructional Design is the most appropriate means for solving this problem. The curriculum in its current state is meant to prepare the nursing students for the NCLEX. The falling scores by students are empirical data that displays that the curriculum is not appropriate for preparing students for the current NCLEX. More specifically, it is has been identified that the NCLEX has become more driven by the use of critical thinking skills. Also, the students have provided direct negative feedback about the weak use of disjointed case studies, which do not build critical

thinking around the content.

What is needed is to have more in-depth case studies that directly relate to the topics being discussed. It has been identified through student feedback that the weakness of the existing case studies is that the follow-up questions do not fit closely with the topics. A result of this weakness is that the students are not developing adequate critical thinking abilities that are needed to successfully complete the NCLEX. Therefore, the process of generating questions for the case studies would need to be reviewed and enhanced.

The case studies themselves will also need to be relevant, complex and ill-structured problems. Kabur and Kinzer provide strong evidence of the benefits of presenting ill-structured learners in their 2007 article titled “Examining the Effect of Problem Type in a Synchronous Computer-Supported Collaborative Learning (CSCL) Environment ”. The solutions to the problems must not be obvious but also have to be solvable with the tools provided. This will increase the chances that the students develop critical thinking skills around relevant concepts. Creating ill-structured problems will engage the students in a dynamic learning environment needed to develop critical thinking skills around topics on the NCLEX. However, it is important that the problems presented in the case studies are not too complicated, or impossible to solve, or the learners will become severely demotivated (Kapur 455)

The students from the School of Nursing (SON) need to successfully pass the NCLEX, or National Council Licensure Examination. It has been identified that the Exam now relies more heavily on the student’s ability to leverage critical thinking skills (Ertmer 138). Therefore, the students will need to be able to apply actual nursing skills, what

they have learned in the coursework, to real-life examples. It is not enough to simply understand basic medical complications and related procedures. The students must display the ability to react to information that is comparable to the complicated nature of real-world problems. The problems on the NCLEX are becoming more similar to problems that they will face at medical facilities that will need to be resolved with appropriate and effective nursing solutions.

The sequence in which the required tasks are performed in a medical facility will mirror how they are presented and practiced in class. These tasks are: identify an issue that a patient is having, form a diagnosis and appropriate solution and then apply that solution in a timely fashion. The fourth and final step of applying the solution in a timely fashion is not something that can be reproduced easily in an instructional environment and is normally addressed later during the nurse's residency placement.

The curriculum will be organized based on major categories covered in the NCLEX. Content that falls into each major category will be broken into sub-groups of similar information. Each sub-group of content will be composed of a set of modules that further classifies procedures. Each module will be provided with a clear set of steps. The first step will be to identify the needs of a patient. For example, a nurse must have the capacity to clearly read vital signs and form an analysis of the general health or needs of the patient. Next, a nurse must possess a working knowledge of solutions that their field has for these patient needs. After that a nurse must be able to quickly identify what solutions will fit with what need. The instruction will provide further clarification on what needs fit what solutions.

The instruction will present what limits the solutions have (or in other words what the solutions “are not”). These limits will be further defined by providing examples of misapplied solutions, exceptions to rules or any other complications that can come about by choosing solutions inaccurately. Lastly, cases studies will be presented with each module that ask the learner to connect a patient need with a nurse’s solution. Before ill-structured case studies are leveraged the curriculum will first present solved examples of a similar patient need paired with an appropriate nurse’s solution. This will serve as a model of how the task is to be completed and will build confidence in the learners perceived ability to complete the task. Research by Sweller and Cooper provides evidence that this will decrease the potential of cognitive overload (Sweller). In her book, Building Expertise: Cognitive Methods for Training and Performance Improvement, Ruth C. Clark explained it like this,

> “If you think back to your high school math class, you often had homework assignments in which one or two examples were followed by twenty or more practice problems. Sweller and Cooper (1985) found that learning could be much more efficient (faster and better) when learners reviewed examples in place of some of the practice problems. The so-called *Worked Examples Effect* is perhaps one of the better researched yet still underutilized cognitive load guidelines available to practitioners today.” (Clark 104)

There are two main groups of people that will serve as the audience, the pilot group and then the full population, if the pilot is a success. The pilot will be rolled out to only two undergraduate classes initially. First Acute and Chronic Nursing I, which is offered to juniors in the spring semester, and then Acute and Chronic Nursing II which is a senior course that is taught in the fall. Eventually, if the pilot comes back with favorable results, the project will be affecting all of the students in the undergraduate program.

The members of this learning group possess four major common traits. They are all undergraduate Students at the Brooks Health Science Center School of Nursing. They are all studying to be nurses. All of the students in this group have passed the entrance examination to SON. All of these students take the course evaluation regularly.

The members of this learning group are set apart by a number of differences. The group is split into two major groups, one group being undergraduate juniors and the other group being undergraduate seniors. The second group has already completed Acute and Chronic Nursing I. They all provide different responses on the course evaluation relative to their different perceptions and experiences. This population also displays a diverse range among the categories of age, gender, sexual orientation, and socio-economic status, political and religious views.

The motivations of the students at the SON are their desires to pass the NCLEX in order to be certified as legally practicing nurses. The SON is an institution of higher learning. The learners are paying tuition to attend and it can be assumed that they are attending voluntarily. The two courses that the pilot is composed of are core classes and

must be passed in order to graduate from the program. With all of these criteria we can conclude that the learners are already highly motivated to be engaged and succeed.

It has been identified that the existing case studies in both Acute and Chronic Nursing I and II could be enhanced. Each case is presented and then followed by slides that contain simple questions. The questions are not directly related to the case. Also, the questions are not difficult enough that they promote critical thinking.

In order to enhance the case study, the questions should be redesigned. They should be directly related to the needs of the case to increase their relevancy. In addition, the questions should present ill-structured problems that promote meaningful learning to take place (Kapur 455). The questions used should not all be straightforward or simple. This will encourage the learner to apply critical thinking in order to solve the case. Also the subjects in the case studies are not fully developed in a way that cause the learner to form any sense of empathy for them. Interactive branching eLearning scenarios can be deployed that create full stories of potential patients and break down the process into smaller chunks of information that can be processed with relevant questions and activities as the timeline of the eLearning progresses. This process of increased engagement will cause the program to be more appealing and will ultimately better prepare the learners for the NCLEX.

There is a single learning goal that is supported by five key objectives. The goal is to reclaim an average percentile of 70% on the National Council Licensure Examination (NCLEX) among students who graduated from the Brooks Health Science Center School of Nursing (SON). The key objectives that support this goal are as follows

1. Rescue the impression that students have of the SON's ability to fully prepare students for the NCLEX exam.
2. Build a more developed critical thinking skillset among students through relevant, ill-structured, yet solvable, case studies paired with challenging and relevant follow up questions.
3. Take away a set of principles that can be applied to relevant real world scenarios to generate appropriate and effective outcomes.
4. Construct a knowledge-base and skill-set that will prepare students to make quick decisions while under pressure that save patients lives via group discussions on the "Course Management System".

These instructional goals and objectives are in line with the desired outcome of the curriculum enhancement; therefore they all stand-alone unaffected by the doubts of those involved. The objectives are not diluted by Professor David Cunningham's apparent low prioritization of case studies. They are not weakened by the previous failed attempts at online student forums. If anything these methods have been tried in the past and were unsuccessful due to lack of technical support or improper execution.

The specific and measurable key performance indicator that the learners should display after this pilot would be higher exam scores on the NCLEX. Supportive observable behaviors will be a strengthened confidence in reviewing cases and making appropriate decisions on an effective solution in an acceptable amount of time. A

successful learner will also display the ability to rationalize and defend why those choices were made utilizing criteria of medical necessity.

The content will be organized or “chunked” by identifying ways to classify all of the potential case studies into sub-categories. Starting at a high level with the four main categories from the NCLEX that would encompass all of the possible case studies. The content will first be organized by sorting it under each of these four main categories. Then separate modules will be formed by drilling down further into these main topics and breaking up each of the four main categories into smaller chunks where possible. By additional sub-groups can be formed. As George Armitage Miller wrote, the human process of encoding information into memory involves grouping it into “familiar units or chunks”. Therefore it is easier for learners to remember more information if it is already organized into chunks based on similarity (Miller, 1956).

The most common summary of main categories of the NCLEX exam are made public and could easily be proposed as a starting place. The main four topics on the exam are:

1. Physiological Integrity
2. Safe and Effective Care Environment
3. Health Promotion and Maintenance
4. Psychosocial Integrity

(?, Michelle, “What are the 8 Main Content Areas on the NCLEX-RN.”, magoosh.com, https://magoosh.com/nclexrn/8-main-content-areas-nclex-rn/)

This grouping format will also be useful for identifying similarities and differences, which will help clarify what the topics encompass and their limits or what they are not. Some examples will be provided that differ from the actual case studies to help build out the context to make them less flat or two-dimensional. In other words these sub-groups will be compared against one another to better define them. This choice is supported by the research done on identifying similarities and differences, or the use of “examples and non-examples”. This research suggests that learners encode more information into long-term memory when ideas are not only explored as what they are, but also viewed from the opposite viewpoint clearly identifying what the ideas are not (Dean et al.) (Marzano et al.).

The content will be presented in this order in an effort to classify the cases into groups as the course progresses. For the first step of the presentation of each sub-group the instructor will only present limited content in a high-level directed learning environment. This will be conducted in a knowledge-centered approach that defines that group type and gives solved examples. In other words, only enough content so that the students will have a context. All content will be represented through images on PowerPoint slides as much as possible. This is supported by the research of nonlinguistic representation or dual coding. This research has found that learners should be presented with equal amounts of visual and auditory information. If one modality drastically outweighs the other then the receptor of that modality becomes exhausted and a bottleneck effect ensues (Pavio).

The ill-structured case studies will be made available to the students after the high-level limited content. The cases will be assigned as solo work in a student-

centered open-ended learning environment approach. The students will work in a free writing journal where they will capture their thoughts on the sub-categories. This choice is supported by the research on inductive reasoning. The learners will freely develop new ideas and form conclusions around the content by working with information that was presented to them in the cases. (Dean et al.) (Marzano et al.)

Having the nursing students work on the enactive case studies on their own will be symbolic of the way they will work in the medical facilities that they will be employed in. The solo work and group work sandwiched in the center of each module will be open-ended to allow students to process the information and gain a deeper understanding. The eLearning activities will be symbolic of then nature of actions that are taken have real life consequences in the real world for the patients of the medical facilities.

The students will then condense their findings into summaries and post them on the group discussions on the School Of Nursing's Course Management System. The Course Management System was selected for student discussion because there were complications with using the third party Wiki web site. Students were not engaged in the process and there was a risk of the third party platform going down with no way for SON to address the system outage (Etmer 144). The students will then work together in https://www.simplemachines.org/ to discuss their findings on the cases. This choice was made based on the research done on Cooperative Learning – Individual and group accountability. This portion of the curriculum will be most beneficial to the nursing students that are low or middle level performers (Johnson et al.). Team learning will

make other high-performing student's ideas and responses visible to lower performers and will also provide them a resource of positive feedback to increase their confidence.

There will also be a process in place that will address the student's apparent lack of engagement in the previous attempts at cooperative learning via the Wiki platform. In addition to their initial post, the students will have a minimum requirement of two thoughtful responses on other student's posts due to get credit for the cases. These responses to other student work must include both positive and constructive feedback. These follow-up posts from peers will ensure for cross-evaluation and self-corrective opportunities.

After the students have processed the cases and discussed their reasoning for the way they chose to solve them, then the instructor will present a more complete fully narrated PowerPoint. This presentation at the end of each module will be directed learning to assist in reinforcing best practices. This presentation will follow-up after the students exploration of the topic and confirm that accurate information has been communicated and is understood by learners.

For students who need additional support there will be additional material and assignments available. Reinforcement for this group of students will be provided through a suite of complex branching eLearning scenarios with many potential outcomes. The outcomes will be related to the users decision at each branching event. There is only be one truly successful outcome and it will be identified with a visual token and audio chime of success. This choice on the visual token is supported by research that has been done on what is referred to as "Reinforcing Effort and Providing Recognition". Rewards and

symbols of recognition have been shown to increase student motivation and morale (Dean et al.) (Marzano et al.).

The students will have plenty of opportunities to be actively engaged by completing course work actions. The students will compose free-writing journals that will help engage their creativity in the content through inductive reasoning. They will comment on other's work in their small groups on the Course Management System to cross-evaluate ideas and further deeper their comprehension. The learners will be encouraged to engage with the branching complex problems eLearnings a number of times to observe the multitude of outcomes.

For extra credit the participants who desire a greater challenge can choose to compose the optional one to two paragraph summaries that compare and contrast the different sub-groups in that group type. In these entries they must clearly identify what the sub-categories are and what the sub-categories are not. This choice is supported by the research done on what is referred to as "Identifying Similarities and Differences – Examples and Non-Examples". Creating a deeper and more complete understanding of the topic will increase the nursing student's knowledge retention. (Dean et al.) (Marzano et al.) These writings will be posted as entries on the Course Management System. They will be optional personal assessment centered activities that can be utilized by students seeking a greater challenge. However, all students will be encouraged to participate in the process.

It was shared that SON has a "Course Management System". In the current curriculum, each module is loaded in the CMS and has an evaluation at the end.

Therefore we can assume it would also be possible to synthesize an NCLEX practice exam that can be leveraged to generate data for evaluation purposes. This practice exam can also be provided to all students as a resource to practice for the exam.

In addition, it is recommend that SON continue to track the average results of the actual NCLEX exam among SON students. Additional data can be compiled, without waiting by having a population of students take the NCLEX practice exam after completing coursework. We already know that students are not passing the NCLEX at an acceptable rate. So, having a Formative student evaluation would be redundant. We would focus on a Summative Student Evaluation after they have completed both pilot courses. (Acute and Chronic Nursing I & II)

Different forms of evaluations and assessments will take place all throughout the entire process. We already know that students are not passing the NCLEX at an acceptable rate. So, having a formative student evaluation would be redundant. We would focus on a Summative Student Evaluation after they have completed both pilot courses. (Acute and Chronic Nursing I & II) However, that does not exclude the need for a formative evaluation on the coursework.

A formative evaluation will be implemented to ensure that the course design and development is accurately aligning with the goals and objectives. This will be conducted utilizing Gooler's eight steps: Purpose, Audience, Issues, Resources, Evidence, Data Gathering, Analysis, and Reporting. A simple waterfall timeline will be used track if the coursework being developed connects to the instructional goals and objectives.

Gooler's eight step program is suggested by Gary Morrison and Steven Ross in their book Designing Effective Instruction. They write that Gooler's eight-step method is an effective way to structure the formative evaluation. Gooler argues that the more individuals involved in the instructional design process the higher the need for a rigid structure that keeps things the way they are. Gooler's eight steps are a framework that is designed to help keep the formative assessment organized and keep the curriculum moving toward the instructional goals and objectives (Gooler 8).

This timeline will have the working Goal and Objectives posted at the top. It will also include the titles of learning items and artifacts that directly connect to the Goals and Objectives. There will be a column on the document that can be used to document any issues that arise along the way. Instructional designers will have a column where they can check items out to be worked on thus assigning that action to themselves and declaring ownership. All working documents will be hyperlinked into the waterfall timeline to provide evidence for progress. Data will be gathered based on the formative survey and on the percentage of completed items on the waterfall timeline. It is the responsibility of the instructional designer(s) to gather information on what items have been completed and accurately document the progress in the waterfall timeline document. Development will be based of the results of the formative survey. The progress of the development will be reported in monthly or bi-monthly meetings.

Monthly or bi-monthly meetings will be held with Dr. Barbara Miller, the Associate Dean of Academic Affairs at SON, and the design team. The goal of these meetings will be to review the simple waterfall timeline and present the progress since

the previous meeting. A final report will be generated at the end of development including Executive Summary, Evaluation purpose, Methodology Used, Results and Conclusion/Recommendations. The Final Formative Evaluation Report will be used to identify which items or artifacts had complications in the development stage. The Recommendations of the report will suggest follow up processes that will provide appropriate solutions to these opportunities.

The Summative Assessment will be assigned to a randomized population of students who have completed both pilot courses. Ideally, this randomized population will be selected from populations that represent all regions of grade point average (GPA) scores. In other words, the population of students must have a diverse range of GPA. Other criteria for selecting a truly randomized population may be recommended by Subject Matter Experts.

The goal of the evaluation is to form a summative assessment that provides evidence that the new approach is effective and therefore should be implemented in the rest of the coursework. If there is an increase in the average scores that students receive in the synthesized practice NCLEX assessment on the CMS then we can project that the pilot is a success. If we reach the objective of the "return to an average percentile of 70% on the National Council Licensure Examination (NCLEX) among students who graduated from the Brooks Health Science Center School of Nursing (SON)": then we can confirm that the pilot was successful.

Conversely, if the Summative Student Evaluations return unfavorable then the data generated from the synthesized NCLEX practice evaluation on the CMS can be further analyzed to identify what sort of questions are continuing to cause

students to fail the NCLEX. A report will need to be generated from the CMS that shows the ratings on what percentage of students failed each specific question. The results of the report from the CMS that shows the ratings on what percentage of students failed each specific question will be presented in an excel document. There will also be line charts and pie graphs that visually display which questions caused the most difficulty. The excel Document including line charts and pie graphs will clearly identify which questions caused the most difficulty. These questions can be used to go back to the coursework and implement further case studies that highlight these principles or concepts.

The artifact that is most crucial to identifying the success of the primary learning objective is an opinion survey given to students. The objective is related how prepared the students feel they are for the NCLEX after taking the pilot courses. This survey was chosen as necessary learning artifact because there is a rising sentiment among students that the coursework does not adequately prepare them for the NCLEX. The survey will directly address this issue and will provide a measure of how well the students feel the course works prepared them for the NCLEX.

The main concern is that the students feel that they are not prepared for the NCLEX. If their scores improve, then we can deduce that they were better prepared for the exam. However, we also want to gauge how the students felt the coursework prepared them for the exam. It was clearly identified that student perception of how well the course prepared them for the exam has dropped. This will prove to be a business

concern with future enrollment. The questions that are to be used on the School of Nursing Curriculum Student Opinion survey are as follows

1. How well do you feel that the coursework at Brooks Health Science Center School of Nursing (SON) prepared you for the NCLEX exam?
2. How well defined were the major topics of the NCLEX exam?
3. Were all of the major topics in the NCLEX fully explored in enough depth?
4. If your answer to the previous question was no, then what topics needed more explanation?
5. Do you feel that the coursework at Brooks Health Science Center School of Nursing (SON) developed your critical thinking skills to a level needed to easily solve problems presented on the NCLEX?
6. Did you feel the need to utilize outside resources to prepare for the NCLEX?
7. If the answer was yes then how many outside resources did you utilize to prepare for the NCLEX?
8. How helpful were the activities and assignments to your understanding of the material?
9. What assignments were the most helpful?
10. What assignments were the least helpful?
11. How likely is it that you would recommend Brooks Health Science Center School of Nursing (SON) to aspiring nursing students?

The survey can be taken at this web address: https://surveyhero.com/c/053ac3ef

In conclusion, there is a need for a curriculum redesign at the Brooks Health Science Center School of Nursing (SON). The successful redesign of the curriculum will be identified by two major components. First, nursing students will achieve an average score of seventy percent or higher on the NCLEX (or National Council Licensure Examination). Second, the students will report in a survey that the new curriculum adequately prepared them for the NCLEX.

The solution includes seven steps that will each be repeated four times for each topic. First, a high-level introduced by the instructor in a knowledge centered directed learning environment approach that defines that group type and provides examples. Then, students explore Ill-structured cases-studies through solo writing journal work in a student-centered open-ended learning environment approach to develop conclusions on the topic. The students will then condense their findings into summaries and post them on the course management system. After that, students will collaborate via a minimum requirement of two responses including positive and constructive feedback to get credit for the cases. Directly after the deadline for the group work, the instructor will post a narrated PowerPoint that speaks to the best practices in solving that case. Next, students have the option to post one-paragraph summaries that compare and contrast the different sub-groups in that group type. Reinforcement will be provided with complex branching eLearning scenarios with many potential outcomes.

This solution will be successful because it organizes its foundation off of the need to increase scores on the NCLEX. The curriculum first presents the students with vital information and tools to gain a basic understanding of

concepts. Then it asks the students to venture out and work through complicated, relevant and realistic problems to process information on their own to draw their own conclusions. These conclusions are further explored in a social environment that promotes engagement and cross-examination. Next, thorough instruction either confirms or corrects the student's exploratory findings. The final branching eLearning reinforce content and provide a platform for practice. There is a diverse set of learning experiences that approach appropriate topics from multiple viewpoints.

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