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dLIS 560
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Trent Hill
Assignment #4

Learning objectives:

By the end of this workshop, a learner will be able to:

1. Find scholarly medical literature from authoritative sources

2. Assess the validity of medical studies

3. Assess the applicability of a medical study to his/her own personal situation

Overview of course:

This course will teach longer-term breast cancer survivors to find and assess medical literature, specifically breast cancer-related medical studies. The workshop will assume a very basic level of scientific knowledge, about the level you would expect from people who graduated from high school (i.e., not that much).

The workshop will revolve around Kolb's theory of experiential learning, with opportunities for Experiencing, Reflection, Abstract Conceptualization and Active Experimentation, while utilizing the ARCS model.

Workshop Outline:

1. *Experiencing (Part I): Evaluating a Medical Study*

About a week before the class begins, I will email out a medical study I have selected. Participants will be asked to read the study carefully and evaluate it for its validity and applicability using an evaluation worksheet I have designed. The learners will be asked to take careful notes about how they reached their conclusions, as well as their emotional responses to the task.

2. *Experiencing (Part II): Guest Speaker*

A guest speaker will be a second opportunity for the learners to experience the evaluation of a medical study. The workshop will open with a physician who specializes in breast cancer survivors discussing how she goes about evaluating medical literature for her own patients.

Both of these Experiencing components are also Relevance devices, and the guest speaker is also an Attention device, per the ARCS model definitions.

3. *Reflection: Evaluating a Medical Study*

At the beginning of the class, we will move on to Kolb's "Reflection" stage by discussing the group's experiences trying to evaluate the medical study. We will attempt to figure out together why the learners want to gain this skill, why it's important to them, as well as what intermediate skills they think they need in order to be successful at evaluating medical studies.

It will also be important to reflect on the affective responses learners experienced while reading these studies. Breast cancer survivors are going to have strong emotional reactions to reading medical studies that promise new treatments and new hope for longer survival and better quality of life. It's important that they understand those reactions so they can keep their emotions from clouding their analytical skills as much as possible.

This stage of the workshop contains both Relevance and Confidence devices. Talking about why they want to learn these skills helps learners understand why this workshop is relevant to their lives. By discussing what we're going to learn and how

we're going to learn it, by identifying intermediate skills, learners will have appropriate expectations for the workshop's outcome.

4. *Abstract Conceptualization: How to Effectively Analyze a Medical Study for Validity and Applicability*

Next, the workshop will move on to Abstract Conceptualization, where I will carefully walk the students through the process of finding and analyzing a medical study.

First, we will do an overview of finding current scholarly medical literature. This overview will include locating relevant databases, basic search techniques and the use of controlled vocabularies, as well as assessing the quality of the source. Some discussion also needs to take place about medical terminology. Perhaps a short overview of good online and print resources for medical terminology would be in order here.

There will be some quick in-class exercises during this stage to achieve both the Confidence and Satisfaction elements of the ARCS model. While discussing basic search techniques, the learners can work along with the instructor to try some basic searches, thus gaining Confidence and achieving Satisfaction. A short browsing session in MeSH would also be a good idea here. Browsing through MeSH is a great way to gain a quick understanding of controlled vocabularies and their hierarchical nature.

After finding an appropriate study, the learner needs to assess the research's validity. Here the concept of peer-review will be introduced, with both the pros and cons discussed. We will also cover ways to evaluate the validity of the research

design, and answer questions like who is funding the study and why, how were the participants chosen, what are established scientific guidelines and were they followed, were the statistics calculated using correct methodology, have the results been replicated elsewhere and are the conclusions drawn by the researchers appropriate for the data. These are all difficult topics and will need to be covered deeply enough to actually be useful but not so deeply that we start to lose people. For example, learners need to understand how statistics are calculated but don't need to be able to do the actual calculations themselves.

There are several opportunities here for in-class exercises, including comparing the methodologies of two different studies, finding peer-reviewed articles and identifying who the primary sources for funding are for a certain study. These are all Confidence devices, as they allow learners an opportunity for successful completion of tasks.

Finally, the learners also need to know how to decide if a research study is applicable to their own personal situations. This includes assessing how a learner's characteristics compare with those of the study participants. At this point in the workshop, I will have the learners go through a worksheet I have developed with two columns. One column will be for information about the learner's own situation (cancer type, prognosis, treatments received, etc.) and one column for that same information about a study's participants using information from the initial study analyzed. Once the columns have been filled out, the exercise of comparing the learner's own situation with that of the study participants should be greatly simplified.

Again, this exercise is both a Relevance and Confidence device. By analyzing the study's applicability to the learner's life, the learner decides if the study's results are applicable. They also achieve Confidence by successfully completing a task.

5. *Active Experimentation: Searching and Analyzing a Medical Study*

After the instruction on evaluating medical studies, we will come to the Active Experimentation phase. The students will form groups of three or four and search for a medical study topical to breast cancer survivors, such as hormone replacement therapy. After a study has been found, these groups will walk through the process of analyzing the study for both validity and applicability. A more extensive handout, similar to the handout given in the introductory exercise, will be given to the students with specific questions they can answer as they walk through this process and an instructor and several assistants will be available for questions. As in the Experiencing portion of the workshop, learners will be asked to take note of their affective experience of analyzing the study.

The small groups will each give a report on their findings, including both their actual analysis of the study and the group's response to their task. Did they feel more confident in their analysis skills after learning more about how to analyze the study?

This step in the workshop hits on all of the ARCS components. The task of searching for an article falls into the Inquiry Arousal subcomponent of Attention by giving the students a puzzle to solve. Searching for an article topical to breast cancer survivors, of course, falls into the Relevance category. Giving the learners a task that they can successfully complete is a Confidence technique, and the Satisfaction component will be met through both the extrinsic rewards of getting feedback from

their peers and instructors during the group report session, as well as the intrinsic rewards of achieving these new skills.

The wrap-up discussion for this workshop will center around what to do with this information. The learners have analyzed a medical study – so what? What can they do with this information? This is something that each survivor will need to assess for herself. Is this a study in which she would like to participate? Should she talk to her doctor about the study? Are the potential benefits of a new treatment worth the risks and side-effects?

Learning Styles:

Different learning styles are addressed throughout this workshop. Type 1 learners, who favor "feelings and reflection" (McCarthy, p. 1), will appreciate the opportunities to discuss their affective responses to the process. They may struggle, however, with the in-depth instruction on research methodology and learning to put their analytical skills ahead of their emotional reactions. Type 2 learners, who favor "thinking and reflecting" (McCarthy, p. 2), will be right at home in this class. This type of deep scientific thinking will satisfy their love of analysis. Where this type of learner might struggle is in the group work, as well as the focus on emotions. Learners who fall into the Type 3 category favor "thinking and doing" (McCarthy, p. 3). This workshop could be a challenge for Type 3 learners, in that it will be heavy on lectures, though the substantial amount of task-oriented work could balance that out. Finally, Type 4 learners favor "creating and acting" (McCarthy, p. 4). One thing that may appeal to Type 4

learners is the discussion at the end about how to apply their medical study analysis to their lives.

Assessment:

In essence, the pre-class study analysis and the in-class study analysis will serve as both pre-test and post-test for the learners, allowing them to assess their progress. As the primary purpose of this workshop is to empower breast cancer survivors to take charge of their own health, there is no need for a more formal assessment of the actual skills learned. Instead, a survey of their affective responses to their skill development will be administered. The success of the class will be measured by whether or not learners feel they are better able to understand and analyze medical studies. If the learners feel more confident, they will feel more in control of their lives, a key to recovery after a long battle with illness.

From the perspective of the instructor, this survey will also serve as an assessment of the course itself, the teaching methods, the activities and the outcomes. If the learners felt engaged, attentive, confident and satisfied, then the course was a success.