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THEORETICALLY BASED PEDAGOGICAL STRATEGIES LEADING TO DEEP LEARNING IN ASYNCHRONOUS ONLINE GERONTOLOGY COURSES

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Online learning has enjoyed increasing popularity in gerontology. This paper presents instructional strategies grounded in Fink's (2003) theory of significant learning designed for the completely asynchronous online gerontology classroom. It links these components with the development of mastery learning goals and provides specific guidelines for incorporating these principles into each aspect of the online classroom such as the syllabus and presentation areas (class announcements, lectures, conferences, study groups). Strategies for cultivating connection to promote learning and retention in the online classroom and directions for future research on these pedagogical strategies are proposed.

Distance-education programs in gerontology that prepare professionals to meet the needs of a rapidly growing and diverse aging population have become increasingly popular. Such programs frequently include television, e-mail and the Web to provide learning opportunities for students who are busy professionals or who live in geographically remote areas (Thompkins & Siegel, 2000; Gainor, Goins, & Miller, 2004; Wood, 2001). There is considerable literature

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on the use of distance education in the form of hybrid courses. These are courses that use television and/or video in gerontological education (Malone, Schmidt, & Poon, 1998; Burrow & Glass, 2001; Welleford, Parham, Coogle, & Netting, 2002; Piercy, K, 2000; Teaster & Roberto, 2000; McBride, Kuder, & Gamel, 2000; Lane, 2000; Coogle, Parham, Welleford, & Netting, 2002; Braun, Dubanoski, Smith, & Kiyak, 2000; Burdick, 2000; Dubanoski, Goodman, Braun, Roberts, & Lenzer, 1999; Shade & Barber, 2004; Johnson, 2004). There is also literature on the development of Web based or online courses in gerontology (Bucur, 2000; Renold, 2000; Carrillo & Renold, 2000) and online gerontological education programs (Szalda-Petree, Offner, Alexander, & Forbes, 1996; Schneider, 2000).

While a number of these articles incorporate aspects of online pedagogy, this paper systematically presents effective pedagogical strategies—for every area of the completely asynchronous online classroom—that are grounded in Fink's (2003) theory of significant learning. Such strategies should engage the whole person (cognitively, socially, and affectively) in the learning process, leading to the development of mastery learning goals (Dweck & Leggett, 1988; Elliott & Dweck, 1988) and to deep, lasting learning. The paper will address aspects of significant or deep learning and pedagogical strategies, encouraging such strategies in each component of the completely asynchronous online classroom. Also, the paper will present suggestions for cultivating connection to influence learning and retention in an asynchronous online course.

SIGNIFICANT LEARNING

Strategies designed to engage the whole person in learning are essential to higher education (Gravett & Petersen, 2002; Rosie, 2000; Grauerholz, 2001) and to gerontology. The adult learning theory which serves as a foundation for the online pedagogical strategies proposed in this paper is Fink's (2003) theory of significant learning. Deep or significant learning is integrative, self-reflective, experiential, self-assessing.It engages different dimensions of the learner and promotes growth of the whole person (Mentkowski and Associates, 2000; Fink, 2003). This model supports enduring change and encourages self-directed learning. Significant learning includes the following components (Fink, 2003):

1. **Learning how to learn: how to inquire, ask questions about a subject, and critically analyze information. This includes**

examining the logic of an argument, checking evidence, looking for patterns and principles, relating ideas to already existing knowledge (Weigel, 2001).
2. **Foundation knowledge: understanding and remembering theory and research.**
3. **Application: applying concepts and skills to an actual problem.**
4. **Integration: connecting ideas and facts.**
5. **Human dimension: learning about oneself and others.**
6. **Caring: learning new attitudes, perspectives, and values.**

Because these components facilitate the development of important cognitive, affective, social, and behavioral attributes in learners, the whole person is impacted. Deep learning can foster the development of mastery learning goals—which emphasize the importance of growth and learning as a process—as opposed to performance or outcome goals. Mastery learning goals relate to effort and persistence with challenging learning tasks, even in the face of questions about one's ability (Utman, 1997; Elliott & Dweck, 1988). Such goals encourage learners to take on challenging learning tasks (Dweck & Leggett, 1988) and are, thus, important in the development of self directed, deep learning.

By carefully structuring and organizing an online course, instructors can assure the full incorporation of all elements of deep learning in an online course. The syllabus, class announcements, lectures, class participation, and student groups can be planned in a way that encourages significant learning.

THE ONLINE CLASSROOM IN ACTION

The online classroom should be planned in a way such that different parts of it encourage and reinforce different aspects of deep learning. The organization of an individual online class will depend on the learning platform, of which there is a variety available. (See Montecino, 2003; Regional Support Center, 2005, for review). However, most platforms include a syllabus, lecture area, class participation area, and student groups—as described below.

The Syllabus

The syllabus is a critical part of any course, particularly an online course. The online course syllabus needs to be more detailed and

comprehensive with specific instructions that pertain to interaction (Renold, 2000). It constitutes a learning contract and provides students with a learning map for the term. It should incorporate guidelines to support deep learning through well-formulated objectives and creative assignments that support those objectives. Specific grading requirements for successfully completing all of the assignments, as well as a detailed timeline, should also be included. The syllabus should be fully prepared and posted before the start of the term. Any changes should be carefully considered, with full announcements provided to alert students of any modifications.

Syllabus Components

Course Objectives: The course objectives, along with a course description, provide a structure to the class that permits the incorporation of the components of significant learning. Course objectives should be presented clearly in the syllabus and be formulated to include measurable activities. For instance, in a gerontology class, the following course objectives might be included: Formulate a cardiovascular disease prevention program for older adults. Formulate an evaluation of at least three important policies affecting the health of older adults. Compare at the beginning and end of this course one's views towards societal roles for older adults.

Assignments: All assignments should be mapped to course objectives (Keeton, 2004) and incorporate aspects of significant learning (inquiry, acquisition of foundational knowledge, application of concepts, integration of ideas, analysis of information, learning about oneself and others, and learning new perspectives) as fully as possible. A schedule of due dates presented at the beginning of the course enables students to plan their work and be proactive in preparation. The weight given to each activity and how it will be graded should also be included in the syllabus. High student satisfaction in online courses is supported by a syllabus that provides guidance for successful completion of all assignments. Such guidance includes timelines for the successive steps and clear explanations of how assignments fulfill course objectives support (Keeton, 2004). Instructors can help ease students into deep learning by breaking down major assignments into component parts. Students may also be encouraged to submit multiple drafts of assignments for feedback for improvement.

Clear expectations and full explanations provide students with a sense of structure and organization in the class, which makes the learning of complex cognitive skills more manageable. This encourages students to persevere with challenging assignments, thus fostering mastery goals (Dweck & Leggett, 1988).

Presentation Areas

Presentation areas in an online classroom are those in which the instructor presents important information course-related announcements and lectures/content for students (Ko & Rossen, 2001). Both areas should incorporate course objectives and elements of significant learning as fully as possible.

Class Bulletin Board/Announcements Area
This area provides an important vehicle for instructor communication with students in ways that promote inquiry, complex thinking, change in perspectives, and connection among students and instructor. Instructor announcements should be posted at least once a week and should map to course objectives. Announcements should provide students with reminders of course assignments and guidelines for studying material in ways leading to the development of complex cognitive skills and an openness to different perspectives.

Lectures
Online lectures can enhance learning in the online gerontology classroom and should be included (Bucur, 2000; St. Hill & Edwards, 2004). Lectures should incorporate components of significant learning and map to course objectives. They can be presented in a Word document or presented in PowerPoint displays, Impactica, and audio recordings, among other modes.

Instructors can present lectures they develop themselves that highlight important concepts in the required course texts and pose questions to encourage the development of metacognitive skills. This means helping students gain an awareness of what they are learning, how they learning, and the ways in which this may challenge their views of aging and gerontology. Lectures can also encourage students to obtain and critically think about information from the Web. For example, students can be encouraged to visit AARP's website to obtain important information about a variety of topics—including international aging issues. Also, students can be provided with links to interactive Web sites and instructed to do interactive exercises. One such example is a link to the British Broadcasting Company's (BBC) Calculate Your Life Expectancy exercise in which individuals can calculate their life expectancy and also have access to articles about factors which influence longevity (www.bbc.co.uk/health/health_over_50/gettingolder_age.shtml). Students can also be instructed to visit a website such as National Public Radio (NPR) at www.npr.org and to listen to various audio segments containing interesting and informative stories that pertain to aging.

Instructors may want to coordinate lectures with specific class participation topics and other assignments. This adds coherence to the course and clearly demonstrates how different course components support each other. Also, activities such as role-playing and simulations may supplement lectures and reinforce information conveyed.

Class Participation: The Heart of Online Learning

Interactivity in the class participation area of an online classroom is a key element in distance learning (Frey & Alman, 2003). There are structural elements that have been found to promote deep learning. Facilitator guidelines & evaluation rubrics increase the quality of online discussions among students by leading to a deeper understanding of course topics (Gilbert & Dabbaugh, 2005). Secondly, questions, problems, and scenarios encourage cognitive presence (Garrison, Anderson, & Archer, 2001) and deep learning (i.e., inquiring about a issue, synthesizing and applying theory and research to understand the issue, using knowledge constructed to learn about oneself and others, and learning new attitudes and values). Third, encouragement to actively synthesize new information with previous knowledge and experience to create new knowledge and understanding of topics and questions posed in conferences stimulates deep learning (Ngeow & Kong, 2003).

Interaction about questions and problems in asynchronous online classes is critical to student success and satisfaction (Chen & Willits, 1999; Frey & Alman, 2003). In posting specific conferences, instructors can map the question and conference topic to course objectives to remind students of the overall learning goals. Mapping that fosters connection among course components has been found to be related to high student satisfaction with online learning (Keeton, 2004). Mapping promotes coherence among course components, which, in turn, promotes deep learning.

Interactivity in the class participation area enables students to be active and collaborative learners. It encourages students to respond to each other in ways that demonstrate critical thinking and application of important course concepts to cases and to their own lives. Interactivity also encourages students to reflect on and challenge their own attitudes towards aging and gerontology. Opportunities for collaboration have a clear relationship to a high level of student satisfaction in the asynchronous online classroom as students can share different perspectives, experiences, and ways of approaching problems (Keeton, 2004).

Interaction activities in the online classroom can promote higher level cognitive skills if activities are structured to promote this objective (Gravett & Petersen, 2002; Verburgh & Mulder, 2002; Larkin-Hein, 2001; Gilbert & Dabbaugh, 2005). Specifically, students engaged in collaborative learning relate new knowledge to knowledge they already possess and reflect on their own viewpoint and those of others to arrive at a more comprehensive understanding of an issue (Collins, 1991). Students learn the value of appreciating and incorporating different perspectives to understand an issue, particularly one that is complex. Students question and challenge each other, point out inaccuracies, gaps, and inconsistencies in each others' arguments and proposals (Lipman, 1991). Because students may be at varying levels of knowledge and cognitive skills, instructor assistance and guidance is important to facilitating online discussions and learning (Jehng, 1997).

Instructors need to take an active role in encouraging dynamic interaction in the asynchronous online classroom. In the class participation area, students should be encouraged to interact with each other and to share their own experiences and perspectives related to what they are learning. Also, instructors should maintain a continuous presence in the classroom, providing individualized and group feedback to students in the class participation area. They should interact with students in a way that encourages students to reflect on the readings and what they are learning from other students, elaborate on comments posted by students, and pose thought-provoking questions that encourage students to think further about an issue. This leads students to develop their ideas further or lead them to consider another way of thinking (Keeton, 2004). Furthermore, through their own postings, instructors model the online class participation process.

Discussion Tasks

Class participation can be structured around discussion tasks that guide students to learn deeply. Types of discussion tasks include guided discussion, inquiry based discussion, reflective discussion, exploratory discussion tasks (Ngeow & Kong, 2003). In a *guided discussion*, the instructor poses a question or set of questions to which students respond by using critical thinking and application of knowledge. For example, questions which encourage students to think critically about and apply knowledge of gerontological research methods, caregiving strategies, gerontological services, or aging demographic trends can be presented. The instructor can demonstrate and then encourage students to inquire about a gerontological question,

critically think about the information presented in the readings, self-reflect on one's own learning process and how this process may be altering how one thinks and feels about aging issues.

In an *inquiry based discussion*, students are guided through a set of questions to learn about a relationship or principle. One example would be to provide students with a set of questions to learn about different methods such as quantitative and qualitative methods. Questions regarding the different epistemological assumptions, the goals or aims, the means of data collection and data analyses of each method could be provided. This would help students to understand important gerontological research methods, develop critical thinking with respect to these methods, and help students see how learning these methods might help them answer important questions about aging.

In a *reflective discussion*, questions are posted which help students to acquire increased awareness of their learning process. Thus, such a discussion incorporates elements of significant learning that pertain to learning about oneself as a learner and learning new attitudes and perspectives. Students are typically required to share their reflections on how they learn about a topic, the knowledge they develop about themselves as learners, and any changes they might make in how they approach the learning process. The instructor can pose questions encouraging students to elaborate on and further develop their knowledge of a gerontological topic and their own learning process. The role of the instructor in a reflective discussion is to provide feedback about a student's critical thinking and application of gerontological knowledge. The instructor can encourage students to further develop their analysis and application of an issue and provide examples of this for students.

In an *exploratory discussion*, students respond to a problem or scenario which requires them to develop different perspectives on, explanations of, and ways of resolving the problem. For example, an instructor might pose a question that involves argument and debate such as the issue of whether to privatize Social Security. The debate could be used to illustrate complex economic, political, and social issues related to the Social Security debate and how they are interconnected. It could also be used to demonstrate that how one thinks about Social Security may reflect the larger question of one's culturally conditioned assumptions regarding the relationship of the individual to society. Students would be required to use their own critical thinking skills to develop their own arguments and perspectives about the Social Security debate. Students could also be required to summarize others' perspectives on the issue that may be

different from their own. Also, they can be encouraged reflect on how their learning process may be challenging their own views and values related to the issue and to aging.

Types of Class Discussion
In addition to discriminating types of discussion tasks, we can categorize discussions by their different purposes within the online classroom.

Introductory Discussion. To foster the development of a collaborative and deep learning environment, an introductory conference in which students introduce themselves should be created. Students can be asked to provide their name, academic and other interests, experience with online courses, how they best learn, and learning expectations or goals for the course. Instructors can take special note of student interests, learning styles, and learning goals and use this knowledge as they plan conferences and course content for the term.

Area for Course-Related Questions and Concerns. An area in which students can share their course-related questions and concerns should be included in any online course. The instructor should respond to each posted question within 48 hours. Fellow students may also respond to posted questions. The open-nature of the questioning fosters rapport among students and faculty and contributes to the creation and maintenance of a learning community in the online gerontology classroom.

Group Activities

The use of small asynchronous online student groups can foster intense discussion leading to inquiry, critical thinking, the integration and application of concepts, and changes in attitudes and perspectives. Learning tasks presented in terms of problem-solving have been found to be related to high student satisfaction with online learning (Keeton, 2004) and foster skills associated with deep learning.

The instructor should assign students to study groups to work on particular projects. According to (Ko & Rossen, 2001), for a collaborative group assignment, the optimum number of students in the group is four. For a group discussion on a topic, the number in the group should not exceed 10. The instructor should provide complete explanations of the purpose and goals of the group, the tasks the group is expected to accomplish, the role each member is expected to assume, and how group members are expected to work together to achieve their learning goals. The instructor should regularly check interactions in the groups to monitor the progress the

group is making in the completion of the task and in developing the elements of deep learning.

The use of online student groups is an excellent way to engage students in problem-based learning. The smallness of the group makes the learning process transparent as the instructor can closely examine all postings to evaluate students' contributions to the construction of knowledge of an issue (Aviv, Erlich, Ravid, & Geva, 2003).

Students can use their groups to collaborate on understanding and resolving a gerontological problem. Problem-based learning includes the following steps (Hawkins, 2004) that should be posted in each group in the asynchronous online classroom:

1. **Identify important facts and issues related to the problem.**
2. **Formulate concepts related to the problem.**
3. **Identify knowledge needed to address the problem.**
4. **Further develop knowledge about different aspects of the problem.**
5. **Formulate new learning needs related to the problem.**

Exactly how these steps can be used is illustrated in the list below. This list can be posted in the groups to provide students with guidelines for engaging in problem-based learning and understanding the expectations for interaction in the group. The list presents an example of the problem of nonadherence to a medication regimen in older adults with high blood pressure. Students would address the following steps to solve the problem:

1. **Identify important facts about the problem: Students can gather information on the prevalence of lack of medication adherence in older adults with high blood pressure and the consequences of nonadherence.**
2. **Identify the knowledge needed to address the problem. Students can identify information that relates to nonadherence to medication. This can include information on age, gender, socioeconomic status, education, and ethnicity factors that may contribute to lack of medication adherence in these populations. Information on the consequences of lack of medication adherence may also be gathered.**
3. **Identify knowledge needed to understand and resolve the problem: Students can identify important psychological, social, cultural, and economic knowledge related to gender,**

socioeconomic status, education, and ethnicity that explains nonadherence. Students or the instructor can select which student(s) will identify psychological, sociological, economic, and cultural/anthropological knowledge related to the issue.

4. **Further develop concepts about different aspects of the problem. Students can develop in-depth knowledge of the psychological, social, economic, and cultural issues that influence adherence in men and women and in those of different socioeconomic, ethnic, and educational backgrounds. Diagrams which depict the interrelationships of the psychological, social, economic, and cultural issues related to high blood pressure in men and women and those of different ethnic, educational, and socioeconomic backgrounds can be developed. These activities stimulate the development of higher level, more complex cognitive skills and cognitive flexibility.**
5. **Formulate new learning needs related to the problem: From their collaboration, students can identify, analyze, and apply knowledge related to the prevalence of medication nonadherence, for example. Students can also identify other knowledge they still need to better understand and resolve the problem.**

CULTIVATING CONNECTION TO INFLUENCE LEARNING AND RETENTION

To foster a learning community committed to deep learning, it is critical for instructors to cultivate and maintain a strong connection with online students. The following activities are suggested to achieve this:

1. **Provide friendly, welcoming bulletin board postings that keep students up-to-date on course activities and their relevance. Such announcements are the "front door" of the classroom and set the tone for the online classroom experience.**
2. **Provide immediacy to demonstrate presence in the online classroom and to build an active learning community. Verbal immediacy to students is critical and has been found to be positively related to affective and cognitive learning in an online environment (Baker, 2004; Arbaugh, 2001). Respond to all e-mails and course related concerns posted within 48 hours. Proficiency in providing feedback to students has been found to top the list of all instructional strategies impacting how students rated overall faculty performance in online courses (Keeton, 2004).**

3. **In interactions with students, use a balance of challenge and support. Point out students' strengths and areas in which improvement may be needed. Provide concrete suggestions and resources that may help the students to improve their learning in the class. To foster dynamic dialogue, it is important to encourage students to interact with each other, especially in the conferences and for faculty to convey enthusiasm for the course. The provision of regular feedback related to student performance in conferences and other assignments is strongly related to student satisfaction with and higher student retention rates in online courses (Keeton, 2004).**
4. **Provide individual feedback promptly on all assignments. Post grades for written assignments within one week. Make use of rubrics and matrices in the grading process so the grading criteria are very clear.**
5. **Identify students new to online learning and e-mail them individually to welcome them to the class. Apprise students that the instructor will assist them as much as possible to assure their success in the course.**
6. **Identify at at-risk students as early as possible in the term. These include students who are having difficulties communicating in the class participation and/or with writing, do not post class participation responses for more than one week, appear to have difficulty keeping up with class readings, and fail to submit written assignments by the due dates. Providing support and assistance to students encountering challenges often makes a crucial difference in the students' online learning experience (Keeton, 2004).**
7. **Administrators should make sure that all online instructors are thoroughly prepared to teach in the asynchronous online environment. This is a critical factor in the success of online courses (Carrillo & Renold, 2000). Instructors should have attained sufficient fluency in the online classroom that they are prepared to design an online class and use online technology in ways that clearly encourage deep learning.**

Distance education has the potential for educating many aspiring gerontological professionals in ways that enable them to effectively identify and address complex gerontological issues. This paper presented online pedagogical strategies rooted in deep learning that enable distance-learning students to address these kinds of issues. Directions for future research include both qualitative and

quantitative investigation of the contribution different pedagogical strategies may make to the achievement of significant or deep learning in the online classroom. Different online discussion, lecture, and group work strategies could be examined for their effectiveness in facilitating the achievement of deep learning and course objectives. This would further our knowledge of effective online instructional strategies, help to build adult learning theory that pertains to the online environment, and advance best practices in gerontological education.

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