

Applied Learning in Online Education: A Comparative Study Employing DEAL Critical Reflection

JOHN R. FISHER
Utah Valley University

MARGARET MITTELMAN
Utah Valley University

This article stretches the boundaries of the meaning of applied learning to include online learning activities. The DEAL model of critical reflection was used to obtain student feedback in comparing two delivery strategies of an upper-division online leadership capstone course. Student reflection comments were analyzed for offerings of the course in summer and fall semesters. The fall delivery of the course adopted an applied reading summary strategy which required students to specifically apply their learning to their work and career plans. The DEAL model of critical reflection provided rich qualitative data evaluating teaching approaches and suggested students preferred applied reading summaries over other strategies.

Keywords: applied learning, online learning, applied reading summary, critical reflection, active learning

“Learning by doing” is a generally accepted definition of applied learning (Schwartzman and Henry, 2009). However, this definition creates a dilemma for scholars and educators of online learning, because the nature of online education makes “doing” difficult. Most online education occurs at a remote distance from the learning institu-

tion. Students work independently and seldom leave their study area to interact face-to-face with other students, the instructor, or the broader community. Communication occurs through computer technology. This paper argues that online cognitive strategies, requiring students to apply learning to practice, fit the definition of applied learning. Through critical reflection, it shows how one strategy — the reading summary — is effective both as a learning tool and an applied learning technique.

LITERATURE REVIEW

While “‘applied learning’ refers more to a spirit or movement in education than to a definitively bounded subject matter,” (Schwartzman and Henry, 2009, pp. 4-5), all forms of applied learning have features in common. They involve “pedagogical principles and practices associated with engaged scholarship, communities of practice, civic engagement, experiential education, and critical pedagogy.” In applied learning, principles are put into practice through the active and concrete process of “learning by doing.” Education is a primary goal. Examples of applied learning are study-abroad, community-based learning, service-learning, independent research, and internships or clinical experiences. They could be part of a course or separate stand-alone learning experiences. In a face-to-face course on emergency management, shadowing a professional, role-playing, demonstrating techniques, and participating in local emergency management training scenarios would be examples of applied learning.

While service-learning is applied learning, volunteering is not unless it has education as one of its purposes. Ryle in 1949 (cited in Schwartzman and Henry, 2009, p. 5) suggested that intelligence combines two kinds of knowledge: “knowing that” which involves “theoretical understanding” determined by the command of facts and principles, and “knowing how” which comprises the manifestation of “skill in performing a task.” Applied learning, Schwartzman and Henry claim, is the integration of “knowing that” and “knowing how.”

Can online education, where learning is at a distance using a computer for remote access, fit the parameters of applied learning, which requires active and concrete learning by doing? This paper argues that online education can successfully provide applied learning, not because learners are physically present and involved in learning activities, but because application of learning can be a mental process as well as a

physical one. Through its findings the paper demonstrates that students can obtain benefits from online education that are similar to benefits from classroom instruction that uses applied learning. In online education, when students relate knowledge to practice and apply concepts to the work situations, they are involved in engaged pedagogies and experiential learning. Since online studies appeal to non-traditional students, who bring practical experience to the educational situation, strategies that require students to apply their new knowledge to their work background fit the definition of applied learning. These paper and pencil type activities bring “learning by doing” in the workplace to the educational experience. Students apply practice to theory, providing conceptual labels to their current work experience. Traditional, younger students gain practical knowledge from the experiences of older students through discussion and online group interactions. This approach fits particularly well in studies pertaining to emergency management. Police and firefighters who bring their work experiences to the learning situation can provide many insights that enrich their own learning experience as well as others as they relate the practice of their trades to the information they learn about leadership and management. As students share their experiences they assist in building a learning community, one of the pedagogical aspects of effective online education (Maxfield and Fisher, 2012).

Not all online strategies fit the definition of applied learning, but many do. The use of applied learning techniques successfully adapts coursework by bringing factors such as communication, active and collaborative learning, and reflective practices and critical thinking to the online learning environment (Al-Bataineh, Brooks, and Bassoppo-Moyo, 2005). Active learning strategies, according to Phillips (2005b), require learners to be self-directed and independent and educators to move from an expert role to coach and facilitator. Active learning strategies accommodate a variety of learning styles and can be used at all phases of teaching. To promote the best learning experiences and create learner satisfaction, feedback from peers, educators, and technology is essential. Phillips (2005a, 2005b) suggests several strategies that can provide applied experiences through active learning. Chat role play is used in a graduate-level online course “to help learners synthesize and evaluate course concepts.” She has learners apply evaluation policies and procedures to a case study involving legal and ethical issues. She also uses problem-solving assignments with real-world problems to give applied learning experiences to nursing students. Another strategy she suggests is online community-building projects (e.g., creating a web site for a support group). Tambouris et al, (2012) show how established pedagogical strategies, such as Problem Based Learning (PBL), can be adapted for online use in conjunction with modern Web 2.0 technologies and tools. Sanford et al (2010) offer an inquiry-based learning activity that gives nurses the opportunity to learn how to analyze and synthesize critical information. Ruey (2010) describes online learning strategies such as submitted artifacts, surveys, interviews, observations that use applied learning concepts. Simulations are

AUTHOR NOTE: In addition to his interest in applied learning in online courses, John R. Fisher, PhD, emergency services faculty member at Utah Valley University, researches mass media impact on disaster public policy. Margaret A. Mittelman, MEd, NREMT-P, is an Associate Chair and the Emergency Medical Technician (EMT) and Advanced EMT (AEMT) Program Coordinator for Utah Valley University. As a more than 30-year EMS veteran, Mittelman presents various EMS topics at national EMS conferences and is the state of Utah EMT Practical Exam Proctor. Questions about this article should be addressed to John.Fisher@uvu.edu.

widely used in training and educating emergency personnel and some of these exercises have been applied to online education (Ten Eyck, 2011). SkillStat (www.skillstat.com) offers several tools used in online teaching of emergency medical technicians including an ECG simulator and an Advanced Cardiac Life Support self-testing and assessment tool (ACLS STAT).

In this paper we argue that applying learning to work and life experiences and vice versa applying work and life experiences to learning are methods of applied learning. This process requires effective communication, active and collaborative learning, and reflective practices and critical thinking, all characteristics of applied learning.

TEACHING STRATEGIES IN THE LEADERSHIP CAPSTONE COURSE

This paper discusses a study based on learning strategies in a leadership capstone course that is part of an online bachelor's degree in emergency management. The course focuses on learning activities that get students to apply their learning to their work situations. Eighty percent of the students in the course are non-traditional students in their thirties, who work in the field of emergency services, principally as fire fighters, police officers, and paramedics. The primary applied learning technique has been to get students involved in applying their work experience to their learning through discussion forums. Students looked at case studies, viewed films, and responded to problem-based questions that required them to apply their learning to their careers or future jobs. In addition, students wrote three papers and in a weekly journal, where they reflected on their learning and applied it to their work situation. One paper required they synthesize leadership concepts and apply them to good and bad leaders they have worked with. A second paper reported interviews they had with leaders in their field. They asked specific questions based on the theories they were studying in class. For the third paper they worked in groups develop a personal code of ethics. As a final project students provided critical reflection about the course using the DEAL model. The final question asked them to tell how they would apply what they learned in the course to their lives and careers.

In the fall offering of the course the assignments were adjusted, adding an applied reading summary and dropping the reflective journals (which feedback suggested students were not taking seriously). The goal of the applied reading summaries was to get students reading the textbook assignment on a weekly basis and to apply their readings to their work experience or future careers. Students chose a section of the assigned reading that had not been summarized by another student. As part of the assignment students were also required to find another reading (preferably a journal article) on the same topic as the textbook reading and relate it to the textbook reading. The applied reading summaries were put into a discussion forum so that all students could read them and comment on them. The applied reading summary assignment had six parts: a) prepare a reference for the summarized section in APA

format; b) state the thesis or theme of the reading; c) write a 150- to 200-word summary of content in point form; d) find another reading on the week's topic, comment on how the other reading applies to the topic of the summary, and provide a reference for the other reading in APA format; e) apply the reading to your work (or future work) situation; and f) comment on the reading summaries of two other students.

CRITICAL REFLECTION

"Critical reflection oriented toward well-articulated learning outcomes is key to generating, deepening, and documenting student learning in applied learning," wrote Ash and Clayton (2009, p. 25). In their article they described "the meaning of critical reflection and principles of good practice for designing it effectively." In addition, they provided "a research-grounded, flexible model for integrating critical reflection and assessment," called the DEAL model. The DEAL model consists of three sequential steps: a) *Description* experiences in an objective and detailed manner; b) *Examination* of those experiences in light of specific learning goals or objectives; and c) *Articulation of Learning*, including goals for future action that can be taken forward into the next experience for improved practice and further refinement of learning (p. 41). Brooks, Harris, & Clayton (2010) explored the potential role of integrating critical reflection and case studies within professional practice nursing degree programs. They analyzed students' critical thinking scores on two essays and confirmed increases in the quality of student reasoning. Between the two essays students were provided learning activities to enhance their understanding of the course concepts. The two course instructors independently scored the first and second critical reflection essays, providing written feedback to each student. The DEAL Model Critical Thinking Standards Table and the DEAL Model Critical Thinking Rubric were used to arrive at the scores. Hale Tolar and Gott (2012) relate the DEAL model to program review. Service-learning program directors used critical reflection to have students examine and make meaning of their experiences. This information became a key component to assess the program effectiveness.

PURPOSE OF STUDY

During the fall semester the leadership capstone course was changed to encourage students to read the textbook more thoroughly and to get them more actively involved in the course materials and in applying them to their lives and careers. A reading summary was introduced which required students on a weekly basis to summarize their readings and reflect on the readings in terms of their careers or future jobs. This study helped determine if the reading summary was effective in achieving these aims. It was hypothesized that if students placed reading as the most important teaching element in the course that this would mean that the reading summary was the preferred learning strategy and that learning goals had been achieved.

METHODOLOGY

Qualitative methods were used to gather and analyze information. As the final assignment in a leadership capstone course offered online in the summer and fall, students were asked to reflect critically on their course experience, using the DEAL approach (Ash and Clayton, 2009). Students were asked to answer four questions. Each question was followed by clarifying statements.

The questions and the clarifying statements were:

1. What did I learn?

- Identify and explain (so that someone who doesn't know you can understand it) a principle, concept, or value that you may have developed or that you understand better from the course.
- Express what you have learned about the principle, concept or value in general terms, as well as in the context of the course, so that it can be applied more broadly to other areas of your life (personally or professionally) and help you in your ongoing personal growth process.
- Introduce a judgment regarding whether the principle, concept or value can serve you in your career. How would you apply the value? Is the value enduring or will it change as you grow older? How and why?

2. How did I learn it?

Clearly connect the principle, concept or value to your specific learning activities in the course so that someone who was not involved would understand, including discussion of the positive and negative aspects of your learning experience. How did you learn about the principle, concept or value? What course activities helped you in the formation of your views about the principle, concept or value?

3. Why does it matter?

Consider how what you have learned has worth over the short and long term, both in terms of your other learning activities and in terms of your life more generally.

4. What will I do in light of it?

- Set specific goals and assessable goals (that you could come back to and check on to see if they are being met) relative to this principle, concept or value over the short and long term.
- Consider the benefits and challenges associated with fulfilling these goals, especially in light of the sources of or reasons for the learning

The analysis of the critical reflections followed a process, described as the data analysis spiral (Creswell, 2013, p. 183). Data from student comments was organized and then read. At the same time the researcher made notes and memos in the margins. Then a process of describing,

classifying and interpreting began. This process put the data in context, made comparisons, and categorized the information using codes to identify themes. The themes were combined and reduced in number and, using grounded theory, propositions were developed that connected the phenomena with their contexts. The analysis focused particularly on the second question, "How did I learn it?" Results from this analysis are reported in in the Findings section of this article.

The number of students responding for the summer term was 20; three were female; 15 were non-traditional students working fulltime in careers as firefighters, police officers or paramedics. The number responding during fall was 31; five were female; 20 were non-traditional students.

FINDINGS

Table 1 summarizes the results from the analysis of student comments from the summer and fall semesters. The analysis identified eight themes which are listed under the heading "Teaching strategies." The first theme groups student general comments about teaching strategies. The remaining seven categories are teaching strategies, which correspond closely to course assignments: readings (including the applied reading summary adopted in the fall semester), discussion forums (including discussions about films assigned to be viewed during the course), a paper from an interview of a leader, a code of ethics developed by students in groups, a paper analyzing good and bad leaders, online lectures, and a journal.

Table 1. Analysis of student comments

Teaching strategies	Summer Semester			Fall Semester		
	Number of comments	Percent of total comments	Percent students N= 20	Number of comments	Percent of total comments	Percent students N=31
1. General comments	3	14%	15%	6	12%	19%
2. Readings (including applied reading summaries adopted in the fall)	5	23%	25%	23	47%	74%
3. Discussion forums (including films)	7	32%	35%	9	18%	29%
4. Interview of a leader	3	14%	15%	6	12%	19%
5. Paper analyzing good and bad leaders	1	5%	5%	2	4%	6%
6. Online lectures	2	9%	10%	1	2%	3%
7. Code of ethics	0	0%	0%	2	4%	6%
8. Journal (not used in Fall)	1	5%	5%	0	0%	0%
TOTAL	22	100%	*110%	49	100%	*158%

*Students commented on more than one strategy.

While similar comments from the summer could be used to support the premise that students use application principles when learning on-line, the following from the fall class are illustrative of the statements that the students made.

Six comments from the fall class spoke generally about how the course strategies helped the students apply concepts to their lives and careers. One student commented, "I learned to clearly connect the principle, concept or value to your specific learning activities in the course so that someone who was not involved [in practice] would understand." Another student wrote, "I spent time during the last semester to get back into the habit of doing some soul-searching, analyzing the interactions I have with others and making goals to change the things." Finally, a student declared, "It was interesting to see how I learned so much more different in this class than in any other course."

APPLICATION THROUGH THE USE OF APPLIED READING SUMMARIES

While only five students in the summer class commented about the value of their readings and the textbook in learning the concepts and principles of the course, 23 students from the fall class espoused the value of the readings in their learning. The percentage of total comments doubled from 23% to 47%. What is remarkable, however, is the percentage of students making comments about reading. This tripled from 25% in the summer to 74% of students in the fall. The one factor that created this significant change was the adoption of applied reading summaries, which required students not only summarize their readings, but also find other readings, apply the readings to their lives and careers, and discuss the work of other students.

Here is a sampling of comments made by 23 students who stated that they learned about course concepts from the readings. Some wrote specifically about how the applied reading summaries helped them learn.

- For me the combination of reading and discussion was the best way to learn the concepts that we covered each week.
- It was in reading this chapter and writing the summary of it that I learned about Hill's model for Team Leadership.
- The readings of this class were able to show me different ways of adapting my strengths or weaknesses to make the best of any situation.
- I felt that the summaries provided an effective vehicle to analyze what you have read and then connect it to an outside reading.
- Reviewing and summarizing the chapter helped me to understand the values I appreciated in my past leaders.
- When I would return to the workplace, I could apply the reading into the active workday.
- I normally am not the person to read my textbooks each week for class.

DISCUSSION FORUMS

Results for the discussion forums showed student evaluation of their value dropped in comparison to the usefulness of the applied reading summaries. Students indicated in the summer class that the discussion forums were the most important way that they learned. Seven students commented, describing how the discussion forums helped in learning course concepts or principles. This represented 32 percent of the total comments and 35 percent of students. In the fall nine comments were made, representing 18 percent of the total comments and 29 percent of the students. This doesn't mean that students didn't view the discussion forums as valuable, but that they viewed the applied reading summaries as more valuable. Here is a sampling of some the nine comments made by students in fall semester:

- I am very grateful to all the individuals in this course that have opened themselves up and expressed their inner thoughts and ideas.
- The conversations between students brought an interesting dynamic to the topic at hand.
- Being able to read what others had to say about it was also beneficial.
- I also got new points of views every week by reading and responding to my classmate's posts on our weekly discussions.
- I realized that my emotions sometimes play a significant role in my decision-making and to be a better lead I need to stick to the facts.

OTHER STRATEGIES

The interview was the third most important learning strategy in both the summer and fall. Three students made comments in the summer and six in the fall. One student indicated: "The assignment of interviewing a public administrator helped me develop a better understanding of the concept of leaders needing to have a strong ethical foundation." Another wrote: "Interview gave an opportunity to sit down and discuss the concept of leadership candidly and an opportunity to develop a personal relationship."

The leadership paper required reflection, application, and synthesis. One student commented about it as a learning tool during the summer and two in the fall. "I was able to compare and dissect each and see both the positive and the negative things," wrote one student. Another stated: "After writing the paper, I tried in every situation to use a good example or a leader I liked and a bad example or leader."

Online written lectures were considered valuable by two students in the summer and one in the fall. This may also reflect on the power of the applied reading summaries as a learning technique. The one student who commented in the fall related his personal experiences to that of the author of the online lectures. He wrote: "Truly, Maxfield spoke

from the heart, and shared some personal experiences with a message to learn from. This personal touch, and being able to identify with those similar experiences as I entered my career as a firefighter/EMT, allowed me to latch on to this message, and reflect on my own purpose and mission in life. It was like fatherly advice that spoke directly to my heart, and helped to create a paradigm shift in the way I was looking at my education.”

The code of ethics was viewed as the least effective strategy, with no comments in the summer and only two (four percent of the total) in the fall. One of the two comments was: “Although I dreaded it for much of the afternoon one Saturday, I did get a lot out of the ethics and leadership paper. I really appreciate how that was put into perspective by that assignment and how it forced me to consider my own ethical oath, relating particularly to leadership in law enforcement.”

CONCLUSIONS

Schwartzman and Henry (2009) determined that a pedagogical activity to be applied learning must be an active or concrete process of “learning by doing.” The online discussion forums (including the applied reading summaries) required students to apply their learning to their work or vice versa to apply their work to their learning. While in a strict sense the discussions may not be a concrete example of “learning by doing,” they required active leaning and they also engaged the student in scholarship, had an experiential aspect, and had education as their goal. Thus, discussion forums and assignments which require student reflection about how concepts apply to practice seem to fit a broadened definition of applied learning.

With non-traditional students the application of learning may go both ways. Students apply the concepts to the workplace, but also use workplace experiences to gain better understanding of the concepts. Discussion forums allow traditional students without work experience to benefit from their older, more experienced learning partners. Thus, applied learning can be redefined to include strategies that allow students to apply practice to theory as well as applying theory to practice.

This study showed that critical reflection can provide a means of determining the effectiveness of various pedagogical approaches in student learning. Also, critical reflection can serve as tool in student evaluation of teaching. In this study, students used critical reflection to evaluate the effectiveness of online learning strategies. Clearly, students preferred applied reading summaries that required reading and reflection over other online learning strategies. The strategy employed higher learning levels as proposed by Bloom’s taxonomy (Ashton and Clayton, 2009). Students synthesized readings, relating them to other readings, and applied them to life experiences. In addition, they analyzed and evaluated the experience of other students.

The purpose of this study was to determine if the applied reading summary strategy was effective in getting students to read and be more actively involved in the course materials and in applying them to their lives and careers. It was hypothesized that if students placed reading as the most important teaching element in the course that this would mean

that the applied reading summary was the preferred learning strategy and that learning goals had been achieved. The results from the critical reflection showed that the applied reading summary was effective in achieving these aims. Students named reading and the applied reading summary as the most effective learning strategy in the course. This study showed that reading is an important strategy in online learning. However, reading must be combined with other strategies to be effective. The applied reading summary, discussed in this study, not only requires students to read the course textbook, but also gets them involved in researching other readings, and applying these to practice. Students become immersed in course readings and other supportive literature and learn the value of critical thinking and reflection as they apply learning to their lives and careers and provide comments to other students in a discussion forum. Reading and writing alone would not fit the concept of “applied learning.” However, when combined with synthesis, application, and discussion the applied reading summaries meet the tests of effective communication, active and collaborative learning, and reflective practices and critical thinking, all aspects of applied learning.

The DEAL approach to critical reflection provided a means of analyzing student learning and the strategies they used in acquiring knowledge. Students indicated the pedagogical strategies they used and which ones they found most effective. Through the critical reflection process, students evaluated learning strategies and teaching methods. The DEAL model of critical reflection provided rich qualitative data used in evaluating teaching approaches and suggesting students preferred applied reading summaries over other strategies.

The findings of this study cannot be generalized, because the study is limited by employing qualitative methods in examining and comparing only two sessions of one course. However, through the process of qualitative analysis, where phenomena were examined in their contexts, the following propositions were developed:

- Online learning that applies theory to practice fits a broadened definition of applied learning.
- Non-traditional students with a lot of practical experience learn by applying practice to theory and theory to practice.
- Critical reflection can provide a means of determining the effectiveness of various pedagogical approaches in student learning.
- Also, critical reflection can serve as tool in student evaluation of teaching.
- The applied reading summary strategy can be effective in getting students to read and be more actively involved in the course materials and in applying them to their lives and careers.

This study shows that reading is an important strategy in online learning, but it must be combined with other strategies (such as application and discussion) to be effective as an applied learning approach.