



Research Paper

Redesign of an Online Course for Student Success: A Case Study

¹Hwangji Lu, ²Robert Smiles

^{1,2}(Department of Health Sciences, The University of Arizona Global Campus, Chandler, AZ, USA)

Corresponding Author: Hwangji Lu

ABSTRACT: Online learning modality offers students greater flexibility, cost-effectiveness, and work-life-school balance to learn and complete a course or an academic program anywhere and anytime. The quality of online courses directly impacts students' learning experience and outcomes. Creating a structured, supportive, and engaging online education experience for students can be achieved through course design or redesign. This study aimed to evaluate the effectiveness of a revised online course in the master's program of health care administration. Mixed-method research was utilized to collect qualitative and quantitative data. Student's academic performance, progression rate, and satisfaction were examined. A thorough understanding of student satisfaction with the revised course would realize the successful implementation of proper pedagogical and teaching strategies. This study suggested that higher educational institutions should provide professional development opportunities and coaching programs to improve the instructors' capability to facilitate interactions and develop an engaging online learning community, which could increase retention and course completion rates.

KEYWORDS: Active Learning, Course Redesign, Moore's Three Types of Interaction, Student Satisfaction

Received 20 Mar., 2024; Revised 01 Apr., 2024; Accepted 03 Apr., 2024 © The author(s) 2024.

Published with open access at www.questjournals.org

I. INTRODUCTION

Online learning has evolved over the past few decades into an indispensable component of higher education [1]. More and more adult learners take advantage of this learning methodology to take courses and complete an academic degree before the COVID-19 pandemic. Despite the fact that online education offers an effective learning platform, online courses continue to have higher drop-out rates than those of traditional campus courses [2], [3]. Personal characteristics are part of the reasons for the high attrition rates. For instance, many adult learners are overcommitted to their personal, professional, and social obligations [1]. They try to balance job demand, family obligation, and their wellbeing with their learning. The additional challenges reported in the literature includes ineffective communication and feelings of isolation, which impact student satisfaction and retention rate [3], [4]. Although the online learning environment presents its unique challenges, numerous exciting possibilities exist for designing and redesigning courses to engage students in their learning and help them accomplishing their academic goals.

The paper begins with an introduction, followed by the theoretical foundations regarding course design and redesign, active learning, student satisfaction, Moore's three types of interactions, and research questions. The subsequent section describes the research design, methods, data collection, and analysis. This follows a presentation of key findings and discussions. Study limitations and future research will be reviewed before the last section. This paper will conclude by discussing the contributions and implications of this study.

II. LITERATURE REVIEW

2.1 Course Design and Redesign

The quality of online courses is paramount because low-quality courses or programs lead to students' negative learning experiences and outcomes [5]. Quality online course design or redesign is said to create a structured, effective, and engaging online education experience for students so that such an environment is supportive and appreciative of learning and intellectual development [6]. Abernathy [1] contended that online course design and redesign must aim at optimizing student engagement. Designing meaningful and effective

online courses incorporating instructional technologies and strategies could support student engagement and active learning [7]. Another best practice for course design and redesign is the balance of active and passive learning [1], [8], [9]. Compared to passive activities using traditional teaching methods, active learning, for instance, application activities, group projects, exploratory labs, and rigorous discussion with peers, could more readily spark learners' interest and engagement [7], [9], [10]. Thus, well-designed courses should be a top priority for higher education institutions to implement active learning activities that increase student and instructor engagement and overall student success in the online learning environment [1], [5].

2.2 Active Learning

Active learning refers to instructional strategies involving students actively participating in the learning and knowledge construction processes [9]. Active learning could be hands-on activities geared toward case-based, collaborative, cooperative, problem-solving, and team-based learning [11]. The pivotal purpose of these strategies is to engage learners' higher-order thinking skills in the affective, cognitive, and practical domains, as opposed to through the traditional, lecture-based teaching methodologies. Active learning provides new learning experiences, engages students in activities, and empowers students in courses; furthermore, students must reflect on and experience real-world problems when making decisions [10]. Active learning not only encourages interactions within the learning community, but also allows learners to connect with the content [8].

Lombardi et al. [10] affirmed that active learning enables learners to be the agency for their education, engages them in metacognitive thinking while they are doing so, and offers them the opportunity to leverage their prior knowledge and experiences to make direct observations. In active learning, learners should also be provided with authentic, real-world contexts that are ill-structured but encourage them to articulate prior knowledge, seek relevant information from multiple subjects, and reflect on their new knowledge [8]. Although active learning may be intuitive in in-person classrooms, translating active learning to the online environment takes careful planning and deliberate implementation. Incorporating active learning strategies within online environments requires instructional design skills and online facilitation skills for success in online learning [9], [11].

2.3 Student Satisfaction

Student satisfaction is a critical quality indicator in teaching and learning used by the traditional classrooms and the online education environment [12]. Student satisfaction reflects the students' attitude toward the learning process based on their learning experience at educational institutions [13]. Plenty of research studies [12—16] examined the factors that could influence student satisfaction in the online learning setting. Interactivity is a significant factor that has a distinguished impact on students' satisfaction in online learning environments. Elshami et al. [15] asserted that students' interactions with their peers, instructors, and content strongly influence students' satisfaction. Satisfied students in online learning would have higher academic achievements since a successful learning process contributes to higher student satisfaction when students complete their evaluations regarding the educational system and its services. According to Jitsupa et al. [16], student satisfaction has a positive relationship with the student's motivation and attitude towards the learning process and its components in online classrooms.

2.4 Moore's Three Types of Interaction

In online learning, many students leave their courses because they feel isolated [2], [3]. Learning is a social activity, and meaningful interactions can promote student learning and course completion [3]. Moore [17] identified three types of interactions that usually take place in online education: student-content interaction, student-student interaction, and student-instructor interaction. Different types of interaction can be used to foster student success and promote meaningful engagement. Therefore, fostering interactions is critical in online learning.

2.4.1 Student-Content Interaction

Student-content interaction refers to learners' interaction with course content or subject of study [17], and it depends upon the format and modes of content presentation [18]. Learning occurs when learners gain information directly from materials like texts (i.e., textbooks, articles, etc.), CDs, audio/videos, other software, etc. [18]. Interacting with the course content triggers learners' problem-solving and critical-thinking skills [13]. Consequently, learners can match the new information with the previous one to build their knowledge and improve their competency. According to Moore [17], [19], in student-content interaction, the learners become knowledge creators since they think by themselves and talk about the information and knowledge that they have learned from the course content. Evidence regarding student satisfaction with course effectiveness can be significantly influenced by the quality of assignments and readings, discussions, and the helpfulness of instructions in online courses [18]. Several studies have found that interaction with online content impacts

student satisfaction. In Glazier and Harris's study [6], surveyed students expressed that clear instructional communication and relevant and well-designed courses influence their satisfaction with courses. Other studies by Ali and Mirza [18], Kuo et al. [20], and Ngo and Ngadiman [21] uncovered that student-content interaction is the most powerful predictor of student satisfaction with e-learning. It is unsurprising to see a low level of learner participation and satisfaction if a course fails to meet the learner's desires and needs [18].

2.4.2 Student-Student Interaction

According to Moore [17], student-to-student interaction happens between students and their peers or among a group of students discussing an issue, doing an activity, or working on a project with or without the real-time presence of an instructor. Moore [17] considered student-to-student interaction a tremendously valuable learning resource. Learning, indeed, is a fundamentally social process. Student-to-student interaction diminishes the threat of poor performance in an online course because students benefit from online discussions by knowing and comparing their understanding of a specific subject matter with others [18]. Students who have no interaction with their peers may be dissatisfied with the online learning environment. Students need to interact with each other to discuss their studies, course assignments, and projects [18]. Interactions and relationships with other students have been widely found to predict students' engagement in a course [22]. Some studies explored the relationship between student-student interaction and satisfaction in online learning environments. For example, Ngo and Ngadiman [21] observed a strong and statistically significant relationship between student-student interaction and student satisfaction. In the same vein, Dharmadjaja and Tiatri's [14] and Pam et al. [23] also unearthed a positive relationship in their research.

2.4.3 Student-Instructor Interaction

Student-instructor interaction refers to the interactions between students and their instructors who are subject matter experts [17]. The interaction relates to techniques teachers use to stimulate and maintain student-teacher interaction as well as promote and sustain student's interest in course content [4]. Moore [17] avowed that the intensity and frequency of the teacher's impacts on students are more significant than student-content interaction alone. Thus, teachers ought to design and prepare materials that could stimulate students' interest, motivate students to learn, facilitate applications of new knowledge, evaluate students' learning, and provide necessary counsel, encouragement, and support [17].

In the online learning environment, student-instructor interaction can arise via many channels, such as discussion boards, emails, instructors' guidance, and online chat [17], [24]. Moore [17] believed that the high quality of student-instructor interaction plays a leading role in determining the effectiveness of online learning, and the students could feel unmotivated and less satisfied if any obstacles interrupt the student-instructor interaction processes. Even though Fabian et al.'s [22] and Kuo's [25] studies did not validate that the student's interaction with their instructor could predict student satisfaction, various empirical studies indicate the interactions between an instructor and students have been associated with student satisfaction and student achievement. The findings from studies by Amoush and Mizher [13], Pham et al. [23], Dharmadjaja and Tiatri [14], and Martin and Bolliger [26] confirmed students most value student-instructor interactions, and such an interact is a significant predictor of student satisfaction with the courses.

Instructors in the online learning environment have a crucial role in supporting and encouraging their students [2]. Archambault et al. [8] argued that an instructor's knowledge of effective pedagogical strategies, including knowing the most appropriate tools for content delivery, and skills to provide supportive, engaging online learning communities are critical. In Atmi et al.'s study [27], it is evident that online learning is effective and successful if the instructor's expertise, teaching strategies, and support are seen by students despite technological interruptions. Students appreciate their instructor's timely feedback and guidance to keep them focused and move forward to completing the course. Additionally, Donlan et al. [28] noted that instructors must provide frequent, timely, and constructive feedback to uphold student engagement. Creating a student-centered learning environment in which instructors possess industry knowledge, care about students, and have basic technical abilities can sustain student engagement and yield high student satisfaction [29].

2.5 Research Questions

Course redesign involves redesigning the whole courses to accomplish better learning outcomes and reduce attrition rates. The main objective of course redesign is to enhance the student experience, increase student satisfaction, and boost student success [5]. Therefore, it is critically important that we investigate the effectiveness of the redesigned course after it is implemented. By examining the usefulness of the redesigned course, the following questions are raised:

- (1) Do students learn differently in the revised course?
- (2) Are there any different levels of satisfaction between students taking the old version and the redesigned course?

III. RESEARCH METHODS

3.1 The Study Context

This research study was conducted in a U.S. university’s global campus offering bachelor’s, master’s, and doctorate programs exclusively online. One of the University’s critical student goals is to support the completion of programs and educational goals driven by student-based timelines. To achieve this critical student goal, the University has striven to provide quality education by keeping courses relevant and engaging. When this studied course in the master’s program of health care administration was revised, the notions of activity learning and the foundation of Moore’s three types of interaction were incorporated into assessments, course content, and course delivery. For example, case scenarios are used in discussion boards and assignments to provide real-world issues to provoke students’ critical thinking and problem-solving skills. Multimedia is also utilized to enhance assignment deliverables and course content.

3.2 Research Design

This study employed a mixed method to obtain the best results possible for the research questions. The population of this study included MHA students who had enrolled in the revised course during the first ten months of implementation. The comparison group comprised students who had enrolled in the old version of the studied course ten months before the revised version was implemented. As the University has offered this course once or twice per month, a pool of faculty is needed to facilitate this course. Therefore, this study only included those courses taught by the same instructors in both versions.

3.3 Data Collection and Analysis

Multiple data sources were included and examined. Data analyses to compare the old version and revised version were performed. Qualitative data sources included content analyses on the discussion boards and students’ comments in the end-of-course survey. Quantitative data were collected from multiple sources. Students’ academic achievement was evaluated through three primary assessments: (1) the average score of two selected discussion boards (maximum: 5 and 6 pts) and (2) the final paper (maximum: 28 pts). The progression rates were collected on the University’s dashboard. The University’s standardized end-of-course survey was used to ascertain student satisfaction. The ratings were on a five-point Likert-type scale from strongly disagree = 0, disagree = 1, neutral = 2, agree = 3, to strongly agree = 4. The end-of-course survey encompasses three core categories: comprehensive items, course assessment, and instructor assessment. The survey was sent to selected students via email and tallied by the assessment team at the University. Analysis of Variance (ANOVA) was utilized to determine whether students in two different versions of courses exhibited differences in academic achievement and satisfaction.

IV. RESULTS AND DISCUSSIONS

4.1 Students’ Academic Achievement

The first research question focuses on both versions’ learning outcomes and progression rates. **Table 1** shows the week five discussion board (W5DB), week six discussion board (W6DB), and final paper used to identify the differences in student academic performance.

Table 1: Students’ academic performance

Data Source	Mean		P-value
	Old Version (N=141)	Revised Version (N=102)	
W5DB	4.74	4.83	0.18979
W6DB	5.50	5.73	0.17548
Final paper	26.43	26.28	0.60593
Progression	85.33	87.67	

For W5DB, the revised version obtained a mean score of 4.83, slightly higher than 4.74 from the old version, even though it was not statistically significant. The average scores of W6DB in both old and revised versions resembled those of W5DB. The mean score of the final paper in the revised version was 26.28 while the old version had a slightly higher mean at 26.43. In the revised version, we added a new requirement and asked for more specific information on a couple of old requirements in the final paper. This might lead to a mean score of 0.15 lower when comparing the revised version to the old version. Regarding the progression

rates, the revised version had an 87.67%, a 2.34 percent point increase from the old version. This increase gives us confidence about the course revision.

4.2 Student Satisfaction

The second research question explores the levels of student satisfaction between the two versions. The results from the University's standardized end-of-course survey were utilized to explain the difference in student attitudes, perceptions, and experiences in the two versions of this studied course. The end-of-course survey is an ongoing effort to acquire feedback from students across the University in a systematic way. Understanding students' experience and satisfaction is fundamental to improving the course curriculum and enriching the student's learning experience. There were 141 surveys sent to students, and 62 surveys were returned in the old version, resulting in a 43.97% response rate. Only 25 out of 102 surveys were completed in the revised version, resulting in a 24.5% response rate. **Table 2** displays students' perceptions with the course. Among 16 survey items, the mean scores from 13 items in the revised version were higher than those of the old version, although they were not statistically significant. On the other hand, three survey items regarding engaging course content, instructors promoting active participation, and instructors' timely feedback were rated slightly lower in the revised version.

Table 2: Students' satisfaction

Survey Item	Old (N=62)	Revised (N=25)
Comprehensive Items		
Recommending this course.	3.11	3.38
The quality of education meeting my expectations.	3.01	3.3
Course Assessment		
Clear instruction given for grading.	3.18	3.42
Assignments requiring critical thinking.	3.65	3.69
Hard work required to earn a good grade.	3.59	3.66
Clear instructions for completing assignments.	3.09	3.34
Engaging course content.	3.37	3.22
Instructor Assessment		
Recommending this instructor.	2.90	3.3
The instructor adding his/her expertise.	3.24	3.53
The instructor communicating high expectation.	3.30	3.53
The instructor fostering critical thinking.	3.43	3.53
The instructor promoting active participation.	3.51	3.42
The instructor offering consistent grading.	3.26	3.36
The instructor giving timely feedback.	3.52	3.28
The instructor giving useful feedback.	2.88	3.26
The instructor's feedback aligning with her/his stated expectations.	2.98	3.23
Total	3.25	3.4

Instructor's timely feedback helps students succeed. Atmi et al.'s study [27] revealed that students value their instructor's timely feedback and guidance to improve the quality of their work, which keeps the students on track. Donlan et al. [28] emphasized that instructors must provide timely and constructive feedback to help students learn more effectively. Another remark by Moore [17] indicated that substantial instructor feedback is critical to student's learning and satisfaction, and students reported higher satisfaction when their instructors gave timely feedback. Conclusively, instructors play a cardinal role in promoting a high-quality online learning experience. The results derived from this course evaluation are congruent with the findings from previous empirical research studies.

V. LIMITATIONS AND FUTURE RESEARCH

There are several limitations to the current study. First, the study is situated in a single university and focused on a course in the master's program of healthcare administration. The findings cannot be generalized to other programs in the same university or different universities. Second, to compare the two versions reasonably, we could only include those courses taught by the same instructors over the 20-month study period. Thus, the sample sizes in both versions were smaller than the actual student counts, and the scores in both versions might not represent the entire student population. Third, the end-of-course survey was managed by the University's Assessment Department. The response rate in the revised version was low. A low response rate generates non-response bias, significantly affecting survey estimates' accuracy. Fourth, all of our students are middle-aged healthcare professionals. The 20-month study period was in the middle of the COVID-19 pandemic. They were juggling their jobs, family issues, and schoolwork more than other professionals. Uncontrollable external factors like COVID-19 could interfere with students' learning and objective evaluation for the 6-week course. Accordingly, the same study would be needed in the near future to validate the findings from the revised version. In addition, there is a call to assess the relationship between the instructor's teaching style and students' academic performance, engagement, and satisfaction.

VI. CONCLUSION

This study examined the effectiveness of course redesign in an online master's program in health care administration. Better academic achievement, progression rate, and student satisfaction are observed in the designed course despite no statistically significant differences. The findings also shed light on the need for enhanced professional development among instructors since several empirical studies reported that the student-instructor interaction is a predictor for student satisfaction and affects student-content interaction and student-student interaction [2], [27–29]. Higher educational institutions should focus on developing instructor's effective pedagogical strategies to create caring, engaging online learning environments. Institutions must supply updated, relevant resources to enrich the instructor's teaching journey. Finally, Institutions must also provide coaching programs to instructors who underperform according to the university's standards.

This study is significant because online courses and programs have become imperative to higher education globally. Especially since the beginning of the COVID-19 pandemic, higher educational institutions have been forced to embrace online modalities to provide education to their students without interruption [22]. The empirical evidence of this study might serve as a guide for other universities to determine whether the framework of Moore's three types of interaction should be adopted to engage students, achieve better learning outcomes, and warrant the completion of the course. Moreover, the results derived from this study are essential for subject matter experts, curriculum developers, and instructional designers who strive to improve course design, enhance course facilitation, and improve students' learning experience and outcomes in online learning.

REFERENCES

- [1]. Abernathy, D. ADDIE in action: A transformational course redesign process. *Journal for the Advancement of Educational Research International*, 2019. **13**(1): p. 8–19.
- [2]. Abuhassna, H. and S. Alnawajha, The transactional distance theory and distance learning contexts: Theory integration, research gaps, and future agenda. *Education Sciences*, 2023. **13**(2): p. 112. <https://doi.org/10.3390/educsci13020112>
- [3]. Jamison, T.E. and D.U. Bolliger, Student perceptions of connectedness in online graduate business programs. *Journal of Education for Business*, 2020. **95**(5): p. 275-287. <https://doi.org/10.1080/08832323.2019.1643698>
- [4]. Chen, L., Transactional distance and college students' learning engagement in online learning: The chain mediating role of social presence and autonomous motivation. *Psychology Research and Behavior Management*, 2023. **16**: p. 2085-2101. <https://doi.org/10.2147/PRBM.S409294>
- [5]. Campbell, R. and B.B. Blankenship, Leveraging the power of course redesign for student success. *To Improve The Academy*, 2020. **39**(2): p. 51-74. <https://doi.org/10.3998/tia.17063888.0039.203>
- [6]. Glazier, R. A. and H. S. Harris, Instructor presence and student satisfaction across modalities: Survey data on student preferences in online and on-campus courses. *International Review of Research in Open and Distributed Learning*, 2021. **22**(3): p. 77-98.
- [7]. Bolliger, D.U. and F. Martin, Critical design elements in online courses. *Distance Education*, 2021. **42**(3): p. 352-372. <https://doi.org/10.1080/01587919.2021.1956301>
- [8]. Archambault, L.H., et al., Pillars of online pedagogy: A framework for teaching in online learning environment. *Educational Psychologist*, 2022. **57**(3): p. 178-191. <https://doi.org/10.1080/00461520.2022.2051513>
- [9]. Benková, M., et al., Redesign of the statistics course to improve graduates' skills. *Mathematics (2227-7390)*, 2022. **10**(15): p. 2569-2569. <https://doi.org/10.3390/math10152569>
- [10]. Lombardi, D., et al., The curious construct of active learning. *Psychological Science in the Public Interest*, 2021. **22**(1): p. 8–43. <https://doi.org/10.1177/1529100620973974>
- [11]. Collins, M.J. and N.E. McLain, Pharmacology course redesign using high-impact practices. *Journal of Nursing Education*, 2021. **60**(9): p. 529-533. <https://doi.org/10.3928/01484834-20210719-01>
- [12]. Kumar, P., et al., Learner-content interaction in e-learning- the moderating role of perceived harm of COVID-19 in assessing the satisfaction of students. *Smart Learning Environments*, 2021. **8**: p. 1-15. <https://doi.org/10.1186/s40561-021-00149-8>
- [13]. Amoush, K.H. and R.A. Mizher, Interaction as a predictor for EFL undergraduate university students' satisfaction with online English language courses. *Theory and Practice in Language Studies*, 2023. **13**(4): p. 927-937. <https://doi.org/10.17507/tpls.1304.14>

- [14]. Dharmadjaja, P. and S. Tiatri, The effect of online interaction types and acceptance of technology factors on student satisfaction with online learning during the COVID-19 pandemic. *Advances in Social Science, Education and Humanities Research*, 2021. **570**: p. 936-942. <https://doi.org/10.2991/assehr.k.210805.148>
- [15]. Elshami, W., et al., Satisfaction with online learning in the new normal: perspective of students and faculty at medical and health sciences colleges. *Medical Education Online*, 2021. **26**(1): p. 1920090. <https://doi.org/10.1080/10872981.2021.1920090>
- [16]. Jitsupa, J., et al., Combining online learning with gamification: An exploration into achievement, motivation, and satisfaction of the undergraduate. *International Journal of Information and Education Technology*, 2022. **12**(7): p. 643-649.
- [17]. Moore, M.G., Three types of interaction. *American Journal of Distance Education*, 1989. **3**: p. 1-7.
- [18]. Ali, S. and M. S. Mirza, Relationship between various forms of interaction and students' satisfaction in online learning: Case of an Open University of Pakistan. *Pakistan Journal of Distance and Online Learning*, 2020. **6**(2): p. 1-17.
- [19]. Moore, M.G., Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), *Distance Education Theory*. 1993, Routledge. p. 19–24.
- [20]. Kuo, J., et al., A predictive study of student satisfaction in online education programs. *The International Review of Research in Open and Distributed Learning*, 2013. **14**(1): p. 16-39. <https://doi.org/10.19173/irrodl.v14i1.1338>
- [21]. Ngo, J. and A. Ngadiman, Investigating student satisfaction in remote online learning settings during Covid-19 in Indonesia. *Journal of International and Comparative Education (JICE)*, 2021. **10**(2): p. 73-95. <https://doi.org/10.14425/jice.2021.10.2.0704>
- [22]. Fabian, K., et al., Identifying factors influencing study skills engagement and participation for online learners in higher education during COVID-19. *British Journal of Educational Technology*, 2022. **53**(6): p. 1915-1936. <https://doi.org/10.1111/bjet.13221>
- [23]. Pham, T., et al., Online learning amid Covid-19 pandemic: students' experience and satisfaction. *Journal of e-Learning and Knowledge Society*, 2021. **17**(1): p. 39-48. <https://doi.org/10.20368/1971-8829/1135293>
- [24]. Moore, M.G. and G. Kearsley, *Distance Education: A Systems View*. 1996, Wadsworth.
- [25]. Kuo, Y., Accelerated online learning: Perceptions of interaction and learning outcomes among African American students. *American Journal of Distance Education*, 2014. **28**(4): p. 241-252. <https://doi.org/10.1080/08923647.2014.959334>
- [26]. Martin, F. and D.U. Bolliger, Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning*, 2018. **22**(1): p. 205-222. <https://doi.org/10.24059/olj.v22i1.1092>
- [27]. Atim, A., et al., Critical success factors in e-learning—A case study. *E-BANGI Journal*, 2021. **18**(4): p. 42-58.
- [28]. Dolan, J., et al., How do you build community and foster engagement in online courses?. *New Directions for Teaching & Learning*, 2022. **2022**(170): p. 89-100. <https://doi.org/10.1002/tl.20510>
- [29]. Marcum, J. and Y. Kim, Oral language proficiency in distance English-language learning. *CALICO Journal*, 2020. **37**: p. 148–168.