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ORIGINAL PAPER

Implementing a Design Framework for Enhancing Student-Centered Learning in an Online Graduate Class

Oya Özgün[1] · **Olgun Sadık**[2] · **Curtis J. Bonk**[3]

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Abstract

This qualitative single case study describes and examines the implementation of the Lee and Hannafin's "Own it, Learn it, Share it" (OLSit) framework (2016) in enhancing student-centered learning (SCL) in an online graduate class. The case involves ten graduate students at a private university enrolled in Foundations of Educational Technology course. The researchers examined various course components, including course design (e.g., schedule, content, assignments, syllabus, etc.), student forum discussions, assignment submissions, interactions within the class, and perceptions regarding the implementation of the framework's components via semi-structured interviews. Key findings highlight the role of autonomy, scaffolding, and authentic audience engagement in fostering active learning. Students benefited from clear course objectives, flexible syllabus design, and goal-setting opportunities. Scaffolding, including the use of rubrics, feedback, and interactive activities, supported student engagement and learning progression. However, the effectiveness of peer feedback varied, with some students finding it less beneficial than lecturer feedback. The study underscores the importance of organization, active participation, and collaborative discussions in creating a productive learning environment. Recommendations include enhancing peer interaction and providing clear instructions for students with varying levels of autonomy. The findings suggest that the OLSit framework has the potential to enhance online education by offering a scalable, adaptable model that empowers educators to create more engaging, student-centered learning environments. Future studies should further investigate the framework's impact in diverse educational contexts.

Keywords Autonomy · Online learning environment · OLSit framework · Scaffolding · Student-centered learning

Introduction

Online education has become a preference due to its various instructional advantages, particularly in higher education. These benefits include access to learning resources, digital collaboration opportunities, and cultivating experiences that directly or indirectly enhance digital skills (Mihele, 2021). Numerous studies in higher education have explored students'perceptions and experiences regarding online education. Positive comments from students have predominantly centered around the flexibility of time and location (Sheail, 2018; Turan et al., 2022). Conversely, studies generally indicate students'reasonable satisfaction with online education, accompanied by insights into challenges such as feelings of loneliness, time management, and maintaining motivation and interest (Şimşek et al., 2021). Therefore, the recommendation is to adopt a student-centered design and implementation approach for online learning environments to create a fruitful learning experience (Hodges et al., 2020; West et al., 2021). Student-centered design is recognized for its ability to enhance student autonomy, engagement, motivation, self-efficacy, self-regulation (Kerimbayev et al., 2023), interaction, and satisfaction in online learning environments (Dumford & Miller, 2018; Pellas, 2014; Shearer et al., 2020; Şimşek et al., 2021; Sun & Rueda, 2012). Additionally, student-centered online courses may provide more

✉ Oya Özgün
oyaozgunn@gmail.com

Olgun Sadık
olgunsadik@gmail.com

Curtis J. Bonk
cjbonk@indiana.edu

[1] Educational Technology, Bahçeşehir University, Istanbul, Türkiye

[2] Department of Computer Education and Instructional Technology, Middle East Technical University, Ankara, Türkiye

[3] Instructional Systems and Technology, Indiana University, Indiana, USA

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flexible and individualized learning opportunities (Kerimbayev et al., 2023) for students in higher education (Bernard et al., 2019; Klemencic, 2017). In contrast, Lee and Hannafin (2016) reported a lack of learner autonomy and insufficient motivational, cognitive, social, and practical support in online learning environments. As a result, recent research has highlighted the need for and recommended the application of student-centered design frameworks in these settings (Shehata et al., 2024).

Online learning environments differ from traditional learning environments in several keyways (Sharp & Sharp, 2016). For instance, they offer greater flexibility, allowing for more self-directed and reflective learning (Dutta et al., 2024; Zhu et al., 2024). To fully capitalize on these advantages, online instructors must have a deep understanding of online learning principles, including the use of appropriate strategies, the facilitation of the learning process, and the maintenance of learner engagement (Archambault et al., 2022). This study, therefore, underscores the critical importance of teacher awareness in applying student-centered learning guidelines within online learning environments. Accordingly, the study focuses on two primary dimensions:

(1) The significance of integrating Student-Centered Learning (SCL) into online learning environments,
(2) The implementation of the OLSit design framework in such environments.

Although there is a huge emphasis on student-centered learning in online learning environments, several instructors still have difficulty in designing and implementing such environments effectively. OLSit framework offers structured guidelines for fostering autonomy, scaffolding, and authentic engagement. However, empirical applications of the framework in real classroom settings are limited. Moreover, this study closes the gap of lack of case-based research which shows how OLSit framework can be applied in hybrid or fully online graduate courses practically and what challenges or benefits may occur. All in all, this study aims to explore how the OLSit framework is implemented in an online graduate-level course and what insights it offers for promoting student-centered learning.

The Characteristics of Student-Centered Learning (SCL)

SCL involves students actively participating in their learning process. This active engagement is apparent for teachers in designing and facilitating students'learning experiences (Hoidn, 2017). In SCL, learners construct knowledge through inquiry, communication, collaboration, problem-solving, and critical thinking. Additionally, knowledge is built through authentic learning experiences rooted in real-world situations. Therefore, learning is an active process, focusing on students and their learning activities rather than solely on content and educators (Wulf, 2019). For instance, Benlahcene et al. (2020) investigated students'perceptions of a student-centered course incorporating complementary activities. The students identified their learning interests and needs, leading to positive perceptions among the students. Recently, researchers have been increasingly interested in exploring SCL in online environments. For instance, Hsiao et al. (2017) pointed out that implementing SCL in online learning environments poses challenges due to the physical distance between instructors and students. A year later, Rayens and Ellis (2018) published a study on SCL in an online applied statistics course, concluding that instructors should enhance student engagement by implementing interaction, collaboration, and feedback strategies. The growing emphasis on engagement in online learning environments (Otto et al., 2024; Zeivots & Shalavin, 2024) stresses the necessity for SCL, with this study concurrently offering a strategic framework for educators. Increased student engagement positively correlates with students'satisfaction and desire to learn (Martin & Bolliger, 2018). These researchers discovered that intensified student engagement helps reduce learners'isolation in the online environment and enhances academic performance.

OLSit Design Framework (Own it, Learn it, Share it)

Lee and Hannafin (2016) asserted that learners should be empowered with autonomy, scaffolding, and authentic experiences in student-centered courses. Autonomy is the progression of responsibility for learning from the teacher to the learner (Shrader, 2003). It enables learners to manage their learning experiences (Dochy et al., 2003) and emphasizes independent learning, self-direction, and responsibility (Mouni, 2024). Therefore, fully autonomous learners are essentially responsible for their learning processes (Benson, 2012; Duong & Seepho, 2014; Yagcioglu, 2015). These autonomous learners tend to exhibit higher intrinsic motivation and task orientation (Cubukcu, 2012). Fotiadou et al. (2017) explored the relationship between learner autonomy and interaction in online education, revealing a positive correlation between student autonomy and student–student interaction.

Another essential component of the OLSit framework is the utilization of scaffolded instruction. Hammond (2001) defined instructional scaffolds as temporary supports provided by teachers or their assistants to assist and encourage learners in developing new knowledge and abilities. Scaffolding aids learners in participating meaningfully, identifying goals, monitoring progress, constructing artifacts (Hannafin et al., 2009) and students can adjust their learning strategies (Ginting et al., 2024).

Various scaffolding strategies include posing questions, peer feedback, and step-by-step instructions (Azevedo & Hadwin, 2005; Brush & Saye, 2000). A more recent study by Midun et al. (2020) examined the influence of scaffolding on assignment quality and learning success in a flipped classroom environment. The study results revealed that scaffolding improved assignment quality and improved learning outcomes. In addition, Chen and Bradshaw (2007) investigated student learning outcomes regarding conceptual knowledge and ill-structured problem-solving and found that students who received prompts had higher scores in their problem-solving activities.

The final component of the OLSit framework, the authentic audience, refers to a critical peer or audience (Kearney & Schuck, 2006). In this context, an authentic audience relates to learners'peers or a real-world audience. The artifacts or projects should be shared with real audiences who can view, use, and criticize the artifacts (Lee & Hannafin, 2016). Learners need opportunities to understand the perspectives and points of view of others regarding their work and projects (Hackney, 2020). Further, online peer feedback seems an effective instructional strategy to enhance students' learning processes and outcomes (Kerman et al., 2024). As an illustrative example, Ali (2020) explored ways to improve feedback given to pharmacy students to engage them in the learning process better. The feedback was categorized into two types: teacher feedback and peer feedback. Ali's study revealed a slight difference between the two feedback forms affecting academic performance. Although teacher feedback was preferred, peer feedback had a similar effect. Similarly, Simonsmeier et al. (2020) focused on the effect of peer feedback on academic self-concept in academic writing among undergraduate psychology students. The reported results suggested a significant improvement in students'academic self-concept with the help of peer feedback.

Method

Research Design

This is a qualitative single case study. One of the researchers, acting as the instructor for a graduate-level online educational technology course, implemented the OLSit framework in his class. The other researcher acted as observer during both synchronous and asynchronous courses. Through this application, the researchers aimed to investigate various aspects, including course design (e.g., schedule, content, assignments, syllabus, etc.), student forum discussions, assignment submissions, interactions within the class, and perceptions regarding the implementation of the framework's components. Case studies typically concentrate on a real-life setting involving an individual, a small group, or an organization (Creswell, 2018). The unit of analysis in this study is the online graduate course, which describes how the course was designed and implemented using the OLSit framework.

Participants

This single case study involves graduate students at a private university in Türkiye, specifically those enrolled in the Foundations of Educational Technology course within an Educational Technology and Design Program. Ten participants were teachers, with one of them currently unemployed. The demographics of the participants are provided in detail below (see Table 1). Additionally, the study examined various course components, including weekly asynchronous individual and peer discussions, weekly synchronous individual presentations, preparation of an individual final project, and development of a multiple-choice task. The critical course components are outlined in Appendix A. The instructor, in collaboration with the other researchers, implemented the guidelines of the OLSit framework in the course activities (see Appendix B).

Course Design and Context

The graduate students took the Foundations of Educational Technology course to improve their learning about educational technology theories, models and strategies. The course objectives emphasized that by the end of the course, students were expected to list the basic principles of instructional technology, understand the differences between instructional technology and instructional system design, become familiar with major issues in the history of instructional technology, explore various learning theories, and recognize the current trends impacting the field. Therefore, this course was offered to lead graduate students to gain new skills analyzing the foundations of

Table 1 Demographics of the participants

Participant	Gender	Teaching Area
P1	Female	English Teacher
P2	Female	English Teacher
P3	Female	English Teacher
P4	Female	Science Teacher
P5	Female	Student
P6	Female	English Teacher
P7	Female	English Teacher
P8	Female	English Teacher
P9	Female	Computer Teacher
P10	Male	Math Teacher

Educational Technology in a broad term. The course was delivered online via web conferencing tool. The students joined this course in the evenings once a week. It lasted for three hours every week. The course included various assignments and grading components with different percentages including discussions, plagiarism training, weekly presentations, systematic literature review, task or project, and participation. The course design facilitated active student participation throughout the spring term. Each week, one group was expected to present and introduce a topic related to educational technology, while the other students engaged in peer reviewing and providing feedback. In addition, during asynchronous sessions, students were required to actively participate in discussion forums (see Fig. 1) focused on the week's assigned materials. The lecturer also offered opportunities for students to deepen their knowledge and earn additional points by selecting an extra assignment. Finally, the course culminated in a final project, which involved an in-depth literature review that could be completed individually or in pairs. During each synchronous session, the lecturer chose an excerpt from the online discussion forum and started discussions based on the students' arguments regarding the specific topic of the week. The lecturer covered the weekly topic with his own presentation to provide deeper understanding of content. During the synchronous sessions, he engaged the students with breakout room discussions in small groups to increase peer dialogue, engagement, collaboration, teamwork, and comfortable learning environment.

Data Collection

The researchers collected the data through observation of synchronous online sessions, semi-structured online interviews, and document analyses (e.g., student reflections and peer feedback forms) (see Appendix B). Synchronous sessions were conducted in Spring-term of the academic year. One of the researchers acted as an instructor and the other researcher observed the synchronous sessions for 14 weeks using a web conferencing tool. The sessions were video recorded. In addition, the researchers reached the asynchronous part of the course from the university's learning management system where the students submitted their assignments, participated in weekly discussions asynchronously, accessed course materials, and communicated with the lecturer and their peers.

The data sources are listed as course materials including assignment descriptions, course syllabus, student reflections, and peer feedback comments. The researchers conducted semi-structured interviews (see Appendix C) to gather the students' multiple perspectives and insights on implementing the student-centered design framework. The semi-structured questions, designed based on the OLSit guidelines (see Table 2 for the guidelines), aimed to probe for a deeper understanding of participants' experiences with the design framework in an online student-centered course. The figure demonstrates how this current study aligns with the OLSit design guidelines thoroughly. Participants shared their experiences regarding student-centeredness, assignment details, and interactive activities within the course. Naturally, these interviews included follow-up questions.

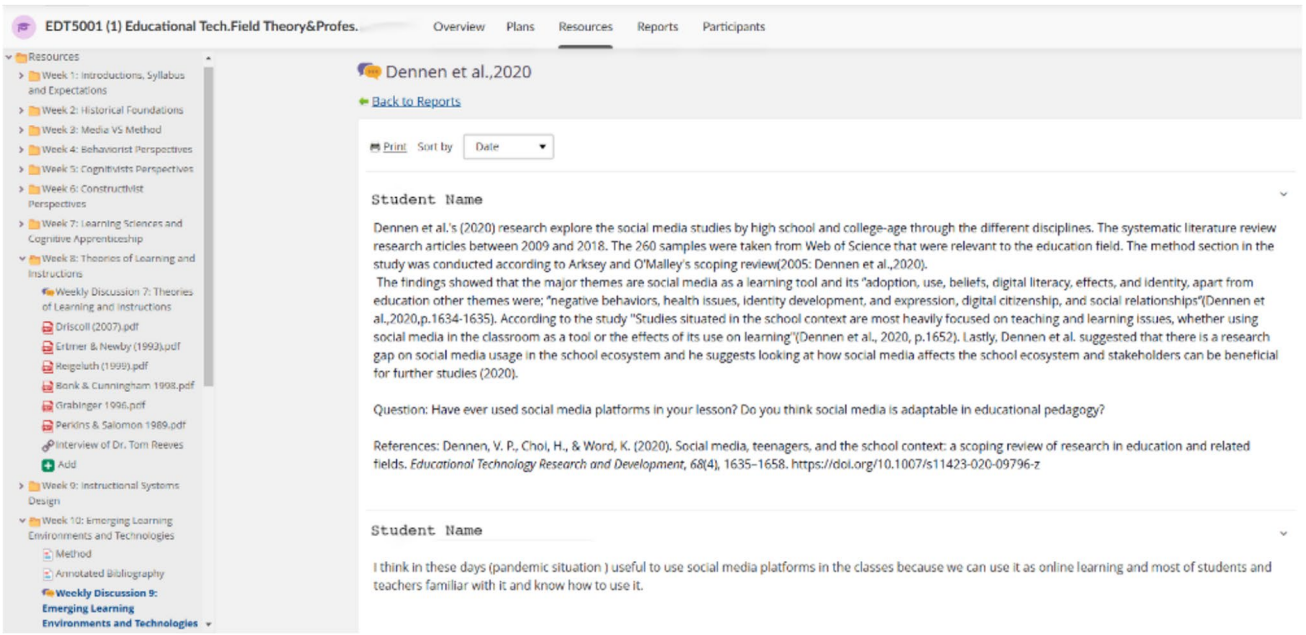

Fig. 1 An example of discussion forum

Table 2 Implementation of design guidelines in the current study

Guideline 1-Facilitate Endorsement of External Goals	In this study, the lecturer explained all the major components and their importance of the course to the students (e.g., weekly discussions, readings, systematic literature review). Before each assignment and activity, the lecturer reminded the students of the importance and benefits of completing each assignment
Guideline 2-Provide Opportunities to Set Specific Personal Goals	The students were provided rubrics for all the assignments to encourage them to review their work and set personal goals for completing the tasks
Guideline 3-Provide Choices That Matter	The students were provided choices for all the assignments. For example, they were allowed to choose two weekly readings among five to seven readings to reflect on the discussion forum. They also chose their presentation topics among the topics the lecturer provided
Guideline 4- Provide Explicit Directions on Initiating Engagement	In the beginning of each lesson, the students were asked questions to activate their pre-knowledge and discuss them in online breakout rooms (small group meetings in the synchronous meeting tool) with their classmates. When they returned to the main meeting room, they reflected what they discussed. Generally, they had different roles (e.g., moderator, note-taker, investigator, etc.) in the breakout rooms to generate an organized discussion atmosphere. Additionally, for all the similar activities, the students were provided instructions to initiate engagement and scaffold their learning goals
Guideline 5-Support the Selection and Use of Tools and Resources	The students were provided some Web 2.0 tools to use in their weekly presentations. The lecturer also provided examples for their presentations and suggested some primary articles for the course. Furthermore, the students were also provided selection flexibility for the readings and midterm assignments
Guideline 6- Prompt to Support Varying Needs	The students were given prompts before the breakout rooms to help them focus on important concepts. Additionally, they were also provided templates and guiding questions for the final project
Guideline 7- Integrate Terminology Used in the Discipline	In the breakout rooms and discussion forums, students were asked to use the terminology relevant to the topic of the week
Guideline 8- Support Learners as They Monitor Progress	Students could monitor their progress with the help of feedback forms that they received from their peers and the lecturer. In addition, they completed guided self-evaluation forms to evaluate themselves
Guideline 9-Promote Dialogue Among Learners and Audiences	Students' interaction and dialogue were supported with synchronous and asynchronous discussions and peer feedback opportunities
Guideline 10- Facilitate Helpful Peer Review	Students review each other's projects and contribution using peer feedback forms and assignments' rubrics

Totally, ten semi-structured interviews were conducted. Each lasted approximately 45–50 min, and transcribed verbatim. The researchers also analyzed 53 discussion forum posts written by students every week to discuss the weekly topic. Similarly, the researchers examined student reflections and peer evaluation after every presentation day. Additionally, 14 synchronous sessions were observed. Each session lasted three hours. These sessions were recorded over the course of the semester. The diversity of data sources supported the triangulation of student experiences across various modes of interaction within the course.

Data Analysis

The data were analyzed using deductive thematic analysis. All qualitative data collection sources, including semi-structured interviews, student reflections, discussion forum entries, and peer feedback, were transferred to NVivo software for analysis. An initial codebook was developed based on nine principles of the OLSit framework. Two researchers independently coded a subset of the data using these categories to ensure inter-rater reliability (IRR). IRR was calculated using percentage agreement which resulted in an agreement of 87.5%. After minor discrepancies were resolved through discussion, the entire dataset was coded. Within each OLSit component, sub-themes emerged inductively. Then, the researchers triangulated findings across different data sources to ensure consistency. Specifically, student reflections about goal setting were compared with interview comments and online discussion posts. To increase trustworthiness, three participants were included for member checking, confirming that the themes accurately showed their experiences. The findings are organized based on the OLSit framework and supported with illustrative quotes from multiple data sources.

Credibility, Trustworthiness, and Limitations

Multiple data sources, including observation, course materials, student peer feedback, student forum posts, and reflections, and semi-structured interviews were utilized to examine and describe the design and implementation of the course. This triangulation of data collection instruments helped to enhance the trustworthiness of the findings. The researchers maintained an audit trail to document the decision-making process in all the stages of the data collection and analysis (Ary et al., 2010). Two researchers independently analyzed the data, and the inter-rater reliability of the analysis results was established through collaborative discussion and resolution of disagreements. After completing the findings section, the results were sent to the participants for member checking. Three participants voluntarily participated to the member checking and commented on the findings. They agreed that the results accurately reflected many essential features of the course, including autonomy, scaffolding, dialogue among participants, and dialogue between the instructor and the participants. A course description was included in the study with a thick description to increase the credibility of the study. Besides, maximum variation purposeful sampling was another way to increase the trustworthiness of the study. Further, peer debriefing with the second researcher helped increase confirmability. Finally, the findings are not statistically generalizable, however; the study provides analytical generalizability by providing key insights of the implementation of the OLSit framework in a graduate level online course.

Despite these efforts, several limitations have been acknowledged. This study was designed as a single case study aiming to describe the course design and implementation of the OLSit framework. The number of students participating in the study was small because of the constraints of COVID-19 period. The participants were concerned about the responsibilities of the course and their workload at the same time. That's why some of them had to drop the course. However, it is important to note that the data collection was not limited to students' perceptions and included observations, student forum discussions, and course materials. The second limitation concerns the emotional state of the students. The research period coincided with the COVID-19 pandemic. Given that most participants were teachers employed at K12 private schools in Türkiye, they had to conduct online classes with their students in the mornings and attended master courses in the evenings. This situation affected their motivation, energy levels, and willingness to learn, as their job duties were outside their usual routines during this time.

Findings

The findings of this study are structured the three primary components of the OLSit framework; Own it, learn it, share it. Within each component, thematic categories were developed using a deductive coding process based on the framework's design guidelines. To strengthen trustworthiness, representative quotes from both positive and contrasting experiences are demonstrated for each theme.

Facilitating Endorsement of External Goals

This principle involves supporting learners in recognizing and embracing external objectives that align with their personal learning goals, fostering a sense of shared purpose and motivation. At the course's first meeting, the lecturer comprehensively explained all components and their significance to the students. Details about weekly discussions, readings, and the systematic literature review (final project) were also conveyed through the syllabus and repeated in each weekly meeting. In the interviews, the participants (P4, P1, P8, P2, P4, P5, P3) consistently reported that the syllabus was highly organized and detailed. For instance, Participant 4 expressed, "It is the first time I have seen such an organized and helpful syllabus. I followed it week by week and I never get lost." Furthermore, Participant 1 remarked, "The syllabus was nicely outlined, crystal clear, and everything went on as anticipated and as programmed, just as it was presented before the beginning of the term." A well-organized syllabus at the beginning of the term served as a semester-long scaffold for students, aiding their learning process. The detailed structure provided a clear path for studying and completing activities and assignments throughout the semester. In addition to the syllabus, the lecturer reinforced the weekly course objectives during each meeting. For instance, he stated,"… This week, you will be able to discuss the major issues in instructional technology and complete your assignments. The first assignment I'm expecting you to start a thread in the discussion forum. You can choose any article in the file and read it, then please write a post and after that write a response post so that your friends and you can create meaningful learning" and then proceed to share the assignment details for the targeted week. The students shared that "the structured syllabus and clearly defined objectives helped" (Participant 8), which increased their comfort in the course.

Overall, considering external objectives with the students' personal goals fostered a sense of purpose and clarity in the learning process. Besides, the organized and detailed syllabus coupled with the lecturer's consistent reinforcement of weekly objectives served as a crucial scaffold for students. As the participants expressed, this structured approach provided a clear roadmap for them and enhanced their confidence and engagement with the course as they ensured the course expectations and goals.

Providing Opportunities to Set Specific Personal Goals

This principle entails facilitating learners in establishing clear and individualized objectives to enhance ownership and motivation in the learning process. In the class, the lecturer provided rubrics for all assignments, aiming to assist students in managing their learning process and taking responsibility. As most participants (P7, P2, P3, P1, P5) expressed, the rubrics were essential in encouraging students to complete the assignments and meet expectations. For example, Participant 7 emphasized the importance of the course rubrics, stating, "Whenever I forgot something, it was easy; I checked the syllabus and rubric to create my plan." Participant 2 also highlighted the significance of rubrics, saying, "Thanks to [the] rubric, I had an idea of how to write a discussion post and respond to our friends, how to choose my sentences better, how to criticize and defend arguments." However, some participants, on the contrary, underscored the rubrics' limitations. For instance, Participant 4 expressed, "I think they were a little bit long." When asking why it seems long, the participant emphasized that s(he) would like to see clear-cut rubric as syllabus and doesn't want to go deeper while assessing the classmates. Based on the participants' feedback, the lecturer decided to revise the rubrics for the following courses. Overall, providing rubrics helped the students set clear goals and fostered a sense of responsibility in the learning process as they expressed.

Providing Choices that Matter

This finding regarding the provision of valued choices emphasizes offering learners meaningful and relevant options within the learning environment, allowing them to exercise autonomy and make decisions that align with their individual preferences and needs. The students shared that the flexibility to choose between an article or a project was a crucial factor in enhancing engagement with the content. For instance, Participant 5 expressed satisfaction with the assignment: "I chose an expert profile for my weekly presentation. If I had not been free to select the topic, I would be stressed, and I would not know what to do." Some participants (P7, P3, P1, P2, P5) highlighted that they felt comfortable when choosing topics for their presentations. Participant 7 remarked, "We chose our topics from the given list, and we felt relaxed." In addition, Participant 3 indicated, "Having options for assignments was great. Choosing something you want to study is the main point of my motivation for the course."

Overall, providing flexibility to select topics for assignments and presentations played a pivotal role that the participants appreciated this opportunity as it allowed them to focus on areas they are interested in and contribute to a more comfortable and productive learning experience.

Providing Explicit Directions on Initiating Engagement

This principle involves offering clear guidance and instructions to help learners effectively commence their learning activities, fostering a proactive and purposeful approach to the learning process. In the class, the lecturer implemented various activities to activate students'prior knowledge and provided instructions, including asking guiding questions, explaining expectations, and assigning roles to conduct in-class discussions. For example, he prompted students to discuss topics in the weekly online discussion forums. The significance of the teachers' instructions for discussion activities was evident in students' self-reflections. Participant 4 stated, "Discussion forum instructions were helpful and clear. We were supposed to summarize the article, mention opinions, and ask questions for our friends." Additionally, Participant 6 discussed the instructions for other assignments, saying, "The instructions, for example, for the multiple task assignment, were so helpful for me. Instructions were clear, and the examples were clear. I just followed the instructions, and I did a good job in a short time." On the other hand, some students found that the assignment instructions needed improvement. For instance, Participant 7 pointed out confusion about the instructions, stating,"Sometimes it took me a while to figure out what the assignment really asks for."

Overall, clear and detailed guidance helped learners initiate their learning activities effectively. Within the study, the strategies such as asking guiding questions, providing clear expectations, assigning roles for discussions offered a purposeful learning environment. Clear instructions improved the students' understanding. On the other hand, certain assignment instructions could be more precise and ensure clarity for all learners. Students whose prior knowledge is low may have a lack of understanding of instructions. It could be about the first year of the MA program or a lower engagement within the field.

Supporting the Selection and Use of Tools and Resources

This principle involves assisting learners in choosing and effectively utilizing various tools and resources that align with their individual learning goals, promoting a personalized and resourceful approach to the learning experience. In the class, the lecturer provided various Web 2.0 tools for students to use in their weekly presentations. Additionally, he offered guiding examples for the presentations and recommended primary articles for professional development. He allowed selection flexibility for the articles, permitting students to choose materials and resources based on their needs and interests. Participant 1 explained the importance of article selection flexibility: "It gave me the liberty of choosing the ability I had the tools I could easily work with." Furthermore, students could choose any Web 2.0 tools to enhance their presentations. Participant

2 discussed choosing a Web 2.0 tool for assignments, saying, "It is so nice to choose the tool and the topic we want for the assignment because if I like something, I can be happier while searching about it. It increases my motivation, and I learn something new about what I like."

Overall, providing support in selecting and flexibility offers a more personalized learning experience and enables learners to tailor their interests. Therefore, their engagement and satisfaction with the learning process, as they expressed, was fostered because they found the learning process personally meaningful and enjoyable.

Prompting to Support Varying Needs

This principle emphasizes the importance of encouragement and guidance in accommodating diverse learner needs, fostering adaptability in the learning environment to address individual preferences and requirements. In synchronous meetings, the lecturer provided prompts before breakout rooms to guide students to focus on important concepts. The findings underscored the importance of various prompts, including lecturer feedback comments. For instance, Participant 3 emphasized the significance of lecturer feedback, stating, "I received feedback week by week from the lecturer, and it was useful for me to develop my project." Another example highlighted the usefulness of the annotated bibliography template, which is a guide for students to gather information about the literature review, with Participant 6 noting, "It is helpful when I write my final report. All the time, I go back to this Excel sheet, check what I have. It is so helpful because all the articles are in a summary form anytime I need." However, some students found the annotated bibliography template complicated, as expressed by Participant 4, "It was a bit complicated because I don't know much about the content." Students expressed that the guiding questions for the final project played an essential role in their academic improvement. Participant 4 indicated the importance of these guiding questions, saying, "All the guiding questions were so helpful, not just for me, but for any students. If we want to submit any assignment, we have time to think before we start. These questions help us know where to start." The instructor used interactive activities as a form of scaffolding. These interactive activities included breakout room discussions. They facilitated active participation and effective interaction among students. For example, Participant 5 remarked, "Breakout room activities were perfect. Even if I didn't read, I could follow the lesson. We were active in the class. You can't finish the lesson without speaking; at least you need to say some words during the meeting."

Overall, prompting and scaffolding strategies played an important role in addressing diverse learner needs and fostering their academic growth. These strategies included, within the current study, the lecturer's feedback, guiding questions, guiding tools (eg. annotated bibliography) helped students navigate complex tasks and they stayed organized. Therefore, prompts and scaffolding help students engage the content meaningfully.

Integrating the Terminology Used in the Discipline

This principle involves incorporating and familiarizing learners with the specific language and terminology relevant to the subject matter, facilitating a deeper understanding and connection to the discipline's concepts. In the class, students discussed the weekly topic in breakout rooms and weekly discussion forums to reinforce the field's terminology. The instructor consistently emphasized the importance of integrating discipline-specific terminology in these activities. During breakout rooms, students shared their opinions about the day's topic after summarizing it in the discussion forum. Participant 6 highlighted the benefits of these discussions, stating, "The breakout rooms were useful; they helped us share our ideas, our summaries of the articles, and listen to each other." Participant 2 spoke about the discussion forum: "Most readings were enlightening for me. I learned a lot about keywords and different points of view. When I summarized the discussion, I took references from the articles. These articles led me to find different articles through references." According to the students, these activities significantly improved their knowledge in the field.

Overall, integrating the specific terminology into the learning activities enabled them to deepen their understanding and actively engage with the subject matter. Through breakout room discussions and weekly discussion forums, they had opportunities to use and familiarize themselves with key terms which fostered a stronger connection to the discipline. These activities enhanced students' ability to summarize and share ideas. Besides, they encouraged the students to explore additional resources and broadening their knowledge in the field.

Supporting Learners as They Monitor Progress

This principle entails providing assistance and guidance to learners as they actively track and assess their own learning advancements, promoting metacognitive awareness and self-regulation. In the class, students could monitor their progress through peer feedback, lecturer feedback, and self-evaluation. They could assess their strengths and weaknesses, enabling them to identify areas for improvement through self-evaluation. The lecturer actively supported students in monitoring their learning progress. Students (P6, P1, P2, P5) found self-evaluation beneficial for recognizing areas of improvement. For instance, Participant 6 conducted a self-evaluation and expressed, "If I were to self-evaluate for this course's subjects or topics, I would give myself eighty percent, as I enjoyed breakout rooms and reading materials. This creates a good background for the course." Besides, P1 also agreed that, "Criticizing oneself

is very important and hard to identify the weak points. That strategy empowered our criticizing ability and you know it is difficult but it opened my eyes and looked at myself as an outsider. It helped me improve my progress." Lecturer feedback was also highlighted as a significant aspect of monitoring learning progress. This feedback process facilitated students in keeping track of their learning journey, with some finding the feedback helpful. Participant 3 commented on the lecturer's feedback: "He gave feedback every minute; the lecturer was so supportive and encouraging. He helped with everything. While writing the proposal, the lecturer supported us and gave feedback."

Overall, self-evaluation, peer feedback and lecturer feedback helped the students identify their strengths and weaknesses. Through self-evaluation, the students critically assessed their performance which developed critical self-reflection skills as they noted.

Promoting Dialogue among Learners

This principle involves fostering interactive communication and collaborative discussions among students, encouraging the exchange of ideas, perspectives, and insights to enhance the collective learning experience. In the weekly meetings, both synchronous and asynchronous discussions, along with peer feedback opportunities, encouraged students to interact with each other. Collaborative work allows students to work in groups, share ideas, and combine different skills to be effective teammates. Participant 2 reflected on collaborative work, stating, "I worked with Participant 7, and she knows the topic and the article's author. I have another skill, so we put our skills and knowledge in one basket. This allows us to extend our knowledge." Some students also emphasized the importance of interaction. Participant 6 highlighted that interaction was helpful, stating, "It is helpful for our communication. An online course doesn't facilitate interaction like face-to-face, but this course was a good opportunity to establish good communication and interaction." Interaction played a significant role in applying student-centered elements in this course. The students shared that online discussions were highly effective. Participant 3 noted, "We had breakout room discussions in class. Classroom discussions were more engaging than other ones" (referring to the discussion forums).

Overall, synchronous and asynchronous discussions with collaborative projects helped the students exchange their ideas and perspectives which fostered interaction in improving communication. In online settings, communication plays a vital role as it avoids psychological gaps. Ashe and Lopez (2021) also indicated that effective communication in online settings helps bridge psychological gaps by building rapport and keeping a sense of presence, supporting student engagement as well.

Facilitating Helpful Peer Review

This principle involves guiding and facilitating a constructive peer review process to enable learners to provide valuable feedback, enhancing their ability to critically evaluate and improve their own and their peers'work. In the weekly meetings, peer feedback on assignments played a vital role as students reviewed their peers'projects. Notably, students perceived that they learned new information through the peer feedback process, and it served as a motivational factor for their learning. Participant 3 expressed the motivation gained from peer feedback, stating, "It was motivating because they liked my presentation. Also, when I finish my presentation, I thought it was good. That kind of alignment was motivating and engaging." The peer evaluation process aimed to increase interaction in the course. Participant 7 emphasized the importance of peer feedback, saying, "I really like listening to feedback from others because I will have more information, deep understanding, and the topic. Two eyes are better than one. If I don't get any input from others, maybe I will understand wrong." Conversely, some students indicated that peer feedback was unnecessary, fruitless, and ineffective for their learning progress. For example, Participant 5 expressed dissatisfaction with peer feedback, stating, "I do not think that disability assessments from my peers are sufficient. I think that most of the evaluations are superficial and made without listening to the presented presentation." Moreover, lecturer feedback was more preferred one. For instance, Participant 1 stated, "It was like from my peers. It was very general. The feedback the professor gave was more informative than my classmates provided. They did not contribute to my learning process." Overall, peer review supported learners in terms of varying perceptions. However, lecturer feedback was more effective and contributive for the students' learning progress.

Discussion

In this section, a discussion of the findings and suggestions for future studies related to the OLSit framework will be provided, grounded in the key components of the design framework. Finally, the researchers considered the OLSit framework, and explored possibilities for improvement and its application in online education.

Own it: Autonomy

In the current study, the lecturer provided instructions, objectives, goals, and purposes to enhance student engagement and increase student interest in the course. The findings

demonstrated that students were aware of the course components, knew how to track their progress, and adhered to assignment requirements. This approach facilitated students in monitoring taking responsibility for their learning process, as evidenced by their expressions. As indicated in the literature, Levine et al. (2021) researched motivation, support, and goal progress with university students, asserting that individual autonomy supports the development of personal goals. Similarly, Moore et al. (2021) indicated that autonomous motivation is linked to goal progress, with low goals potentially resulting in negative outcomes. Shen et al. (2024) also underlined the importance of autonomous motivation, future self-continuity which are the positive predictors of students' online learning engagement. The current study aligns with these findings, with all participants expressing high motivation. The study highlighted the syllabus as a key organizing and encouragement factor according to the participants. The syllabus provided a clear roadmap for the weeks ahead, outlining course expectations. Students had the opportunity to modify parts of the syllabus, empowering them as decision-makers in the course. Similar to the current study, Fukuda et al. (2011) found that guided-autonomy syllabus design increased intrinsic motivation in Japanese university students, emphasizing the positive impact of syllabus details on motivation. The current study's participants noted that setting goals within the course reduced their concern and increased regular course engagement. Specific personal goals led more meaningful learning experiences, aided by resources, syllabus details, prompts, feedback, planning, and organization. Rubrics were highlighted as valuable tools for success guidelines, helping students organize their learning process, meet expectations, choose effective sentences, and defend topics. Correspondingly, Mannino and Shoaf (2007) suggested that providing rubric beforehand enhances their validity as learning tools, while Reynolds-Keefer (2010) emphasized their importance with preservice teachers. The current study's participants also emphasized the positive influence of selection flexibility, allowing them to focus on future goals. This flexibility encouraged deep research in their areas of interest, providing comfort and relaxation. In the same vein, Ustunluoglu (2009) found that Turkish university students may not take responsibility in autonomous activities without understanding the necessity of student autonomy, suggesting the need for training programs on autonomous learning in the curriculum.

Learn it: Scaffolding

In this study, the participants emphasized that the scaffolding provided by the lecturer played a crucial role in increasing engagement. This role of being a bridge for students and encouraging them to monitor their learning process aligns with previous research conducted by Doo et al. (2020). Their meta-analysis revealed that scaffolding significantly influences learning outcomes in online higher education. Effective scaffolding, including prompting, dialoguing, extension, and modelling, has been shown to enhance behavioral engagement in various educational contexts (Afendi et al., 2020; Cho & Cho, 2014). Scaffolding embedded in the learning modules helped higher levels of cognitive presence especially for the students with prior knowledge (Al Mamun & Lawrie, 2024). In the present study, rubrics were found encouraging by some of the participants, serving as road maps that outlined expectations for tasks, assignments, and the course itself. Similarly, Gulikers et al. (2021) found that rubrics were beneficial in explaining intercultural competency development and learning outcomes in vocational curricula. Clear and adequate instructions in the current study facilitated regular assignment follow-ups, contributing to sustained engagement. Notably, the participants mentioned that the flexibility to choose materials and resources allowed them to select based on various criteria such as page numbers, availability, appealing headlines, interests, and curiosity. This extensive selection flexibility demonstrated that the instructor valued the individual interests, experiences, and ideas of the students. Also worth noting, this study included some prompts such as lecturer feedback, an annotated bibliography, guiding questions, and interactive activities. As expressed by the participants, these prompts played a significant role in reducing concern levels, enabling students to monitor their learning progress, and promoting comfort and relaxation. Breakout room activities were particularly beneficial for interaction and information sharing. Mastery of key terminology within the field was facilitated through reading related articles and sharing perspectives. The importance of having both content knowledge and cognitive regulation, such as goal setting and monitoring, was highlighted. Effective and timely feedback, whether from the instructor or peers, was crucial for the students'learning process. Poulos and Mahony (2008) also emphasized the significance of effective feedback in a student-centered learning environment, suggesting that feedback enhances learning based on students'perceptions. As Kerman et al. (2024) expressed that student characteristics, environmental conditions, learning outcomes, behavioral and affective outcomes are the dimensions for effective online peer feedback implementation. Therefore, these can be considered while providing peer feedback opportunities.

Share it: Authentic Audience

In the current study, the lecturer actively promoted student dialogue, fostering collaborative aspects of the course. The process of facilitating peer reviews in assignments and presentations was observed. The findings revealed various opinions among students regarding the effectiveness of peer reviews in enhancing their learning experience. In a study in Malaysia, Foo (2021), examining peer feedback in asynchronous online discussions with secondary-level students, found generally

positive perceptions of peer feedback. However, constructive feedback was lacking, echoing some sentiments in the current study where some students found peer feedback disruptive, careless, and unfruitful. The preference for lecturer feedback over peer feedback that was also noted is consistent with Ali's (2020) findings, which indicated a slight preference for teacher feedback among pharmacy students in Bahrain. Interestingly, the current study found that interaction through peer feedback among learners was not perceived as helpful to their learning, contrary to the positive impact suggested by Osman et al. (2015) in the context of Malaysian higher education students. Osman et al. emphasized that when properly structured, peer-based learning can contribute to a positive learning environment. The discrepancy in results may be attributed to the small number of participants, suggesting that increased peer interaction, possibly through more team-based activities, could enhance opportunities for improvement among learners. The contrasting perspectives in the current study on peer feedback highlight the need for nuanced approaches to accommodate varying levels of autonomy, background knowledge, and preferences among students. Strategies to enhance peer interaction and feedback effectiveness could be explored in future studies to optimize collaborative learning experiences.

The Learning Approach in the Model

The current study's findings underscore the important role played by students in the weekly meetings, emphasizing their active involvement in the learning process instead of relying solely on the lecturer as the central figure. A significant majority of participants highlighted the importance of organization and planning, viewing it essential for creating a more student-centered course. The notion that active student participation contributes to more effective learning, aligning with the principle of learning by doing, is supported by the findings. Along these same lines, Zeki and Guneyli's (2014) study conducted in North Cyprus with 37 undergraduate students, a student-centered learning environment enhanced teacher cognitive and affective skills, with students actively engaging in group work activities. Similarly, Lasry et al. (2014) identified student-centered classrooms as the most effective learning environments in a Canadian context with 214 undergraduate students. However, they noted potential negative outcomes for students with low prior knowledge. In the current study, breakout room discussions were highlighted as an effective means of fostering a SCL environment, allowing students to engage in discussions with their peers on daily topics. This finding aligns with Saltz and Heckman's (2020) research, which indicated that online breakout rooms contribute to increased student engagement and the creation of a more effective learning environment. The emphasis on student activity, organization, and collaborative discussions aligns with the principles of student-centered learning, emphasizing the need for active student involvement and a well-organized structure to enhance the learning experience. Overall, it is clear that SCL is an approach that can be employed within online learning environments to increase learner interaction and engagement through several activities and strategies mentioned in the current study. This study proves that online learning settings can be enhanced and flourished with the help of SCL implementation strategies so that students can increase their belongingness through the learning contents and interaction among peers and lecturers.

This study included concrete design strategies which contribute to the OLSit framework informing future implementation in graduate-level hybrid online courses. Based on the study's results, many key effective practices occurred aligning with OLSit framework's components. To foster autonomy (**Own it**), the course started with describing "personal learning goals" task in which students are supposed to identify individual learning objectives and match them to weekly course outcomes. Sharing rubrics and a clear syllabus further supported goal-setting and building responsibility. To empower scaffolding (**Learn it**), structured discussion forums, guiding questions, and assignment templates (e.g. Annotated bibliography) enabled students to manage complex and higher order tasks resulting in increasing independence. Additionally, breakout room activities were used consistently to encourage collaboration and reflection, specifically for students with varying comfort levels in self-regulated learning. Finally, to promote authentic sharing (**Share it**), students presented their final projects to their peers and received structured peer feedback. As some students found this feedback type beneficial, some students understood it as lacking depth, suggesting the need for clearer peer evaluation criteria or training. Therefore, these design elements are both situated within the OLSit framework and offered adaptable templates for instructors who can apply in similar learning settings.

OLSit as a Framework for SCL in Online Learning

The design framework's guidelines present both advantages and disadvantages for both practitioners and students. The initial guideline, which involves explaining the objectives and goals of activities and the course itself, has shown positive outcomes based on the experiences of the participants and the researchers'observations. Clarifying values and objectives serves as an encouragement tool to create a roadmap for the course. This clarification aids in focusing on course expectations, creating cohesion with course content, and guiding students in planning for future projects and assignments. The framework's effectiveness in online education is highlighted, aligning objectives with the course and engaging students, as emphasized by Reeve et al. (2002).

Another significant guideline involves providing opportunities for students to build personal goals. The study's findings indicate that such opportunities enhance students'perspectives. Creating personal goals with the assistance of rubrics and

feedback helps cultivate a growth mindset among students. Furthermore, the students expressed an increased comfort level when it comes to enhancing specific skills or competencies. In summary, the design framework's guidelines, particularly those related to clarifying objectives and providing opportunities for personal goal setting, contribute positively to the learning experience. The framework shows effective instruction and promote student engagement in online education. Furthermore, providing choices is a crucial aspect of this framework. According to the current study's data analysis, offering choices creates an environment where students can explore what they want to learn. The opportunity to choose assignment topics empowers them, providing the freedom to focus on areas of interest. Importantly, this approach expands students'interests, allowing them to chart their own course for acquiring new skills. In the online classroom, this choice-driven approach fosters a positive learning atmosphere. When students feel comfortable selecting assignment topics and articles, the learning experience becomes more personalized and allows them the chance to shape their knowledge acquisition. And, as noted by Flowerday and Schraw (2000), providing choices also enhances concentration on activities. Creating a positive atmosphere in the learning environment is vital. Prior to the start of the course, students had the opportunity to activate existing schemas with prompt questions. Chang (2017) highlighted that structured prompts assist students in categorizing learning tasks and focusing on activities. Activating schemas through prior knowledge is recognized as a significant instructional step (Merrill, 2002). The lecturer aimed to encourage engagement by acknowledging that a lack of prior knowledge can impact students'academic performance. Students often better understand content when they generate questions based on their knowledge and experiences (Kim & Hannafin, 2011). However, given the online course context in the present study, students required clearer and sharper instructions. Task structuring is crucial in most learning situations, particularly in online learning environments (Tharp & Gallimore, 1988). Therefore, it is recommended that students with lower autonomy levels receive more teacher direction and clearer instructions. Such directive scaffolding reduces cognitive load and helps learners pursue their goals (Weigend, 2014). In addition to prompts and guiding questions, students had the opportunity to select Web 2.0 tools for their presentations in the current study. According to the students'experiences, the ability to choose materials provided them with freedom and empowerment to achieve their goals. Choosing an article as the primary source of the course made them feel comfortable and aided in the revision and learning of new terminology in the field. Furthermore, lecturer feedback played a crucial role in evaluating students'progress and complemented self-evaluation. The findings indicated that academically weaker students benefited more from additional lecturer feedback to establish scaffolding. Providing more attention and allowing these students to progress at a slower pace were strategies that supported weaker students (Hardjito, 2010). Given the challenges weaker students face in identifying areas where they need assistance, strategic support to monitor progress and recognize their needs could be provided (Lee & Hannafin, 2016). Lecturer feedback was preferred by these students as it was perceived as more efficient, realistic, and helpful. Interactive activities were instrumental in empowering students'scaffolding, especially in online courses. Interactivity aided students in concentrating on the course and participating in activities, contributing to improvements in various areas, such as the use of new terminology, evaluating the extent of a student's understanding of the topic through peer interactivity, and activating prior knowledge. For the framework, it is recommended to incorporate interactivity into the "Learn it" step, as interactive elements contribute to building cognitive scaffolding for students. Interactivity has proven to be beneficial for students'conceptual understanding and learning efficiency (Chang, 2017). Creating an interactive environment is closely tied to fostering student dialogue, as highlighted by the experiences of the students and observations of the researchers. Pre-discussions and in-class discussions were instrumental in helping students build a collaborative and interactive classroom environment. Through collaboration, students had the opportunity to learn new perspectives from each other, leading to increased productivity and creativity. Despite the inability to gather in real-time, students could effectively communicate with each other online.

Overall, based on the study's results, the framework appears suitable for use in online courses to enhance a SCL environment. The explanation of objectives as well as the assistance provided in creating personal goals and offering choices were deemed sufficient to elevate autonomy levels among students. Notably, the selection of technological tools emerged as an effective means to enhance scaffolding with technology. Scaffolding with peers was facilitated through interactive activities and peer feedback. Instructional scaffolding within the course was purposefully designed and constructed with explicit directions and prompts, encouraging learner self-evaluation and the use of new terminology in the field. Collaboration and peer review were identified as beneficial components for expanding students'knowledge.

Future Research and Method Applications

The study was specifically conducted in the context of an Educational Technology Field Foundations and Theory course at a private university. To expand the applicability and generalizability of the "OLSit" framework, the paper suggests researchers apply the framework to various subject matter areas and contexts. Furthermore, the recommendation is made to compare the "OLSit" framework with other existing design frameworks to explore potential variations in outcomes based on different learning environments. It is hoped that this

comparative analysis will contribute valuable insights into the effectiveness of the framework across diverse educational settings. Moreover, in online settings, personalized systems can empower to learn autonomously without the direct intervention of tutors by considering individual differences (Hocine & Sehaba, 2024). For future studies, empowering SCL with OLSit framework guidelines in personalized online learning settings could be researched. Moreover, a motivation and engagement scale could be employed to the participants as a part of a quantitative study so that the researchers could measure these variables with the help of scale in addition to the participants' interviews. With the growth of artificial intelligence (AI) applications, the online learning environments could be more personalized and students could tailor their unique needs to be improved. Therefore, future studies could enhance online learning environments with AI-powered online learning systems to see the differences.

Conclusion

The primary aim of the current study was to examine the implementation of the OLSit framework on the experiences of students in a student-centered online graduate class. The investigation involved the collection of qualitative data through methods such as individual interviews, observations of synchronous classes, and the analysis of documents such as self-reflection and peer feedback forms. The framework comprises three distinct steps: "Own it," "Learn it," and "Share it."

In the "Own it" phase, which emphasized student autonomy, positive experiences were reported. The lecturer actively communicated the course's purposes, values, assignments, and activities. This approach encouraged students to take ownership of their learning by setting personal goals, thereby enhancing their sense of responsibility. Additionally, providing choices to students through various options contributed to an increase in their autonomy levels, as reported by the participants.

The "Learn it" phase involved scaffolding, focusing on individual needs. Scaffolded assistance, including models, tools, and resources, was provided to support students in their learning journey. Engagement was fostered through peer discussions and individual progress. However, a few students found instructions to be insufficient, suggesting the need for clearer and more universally appealing guidance. Similarly, some students reported that prompts were not helpful and could be improved for more effectiveness.

The "Share it" phase emphasized an authentic audience, facilitating significant interaction among students and peers. This interaction allowed students to evaluate their studies and progress by utilizing rubrics. Different perspectives emerged during breakout room discussions and asynchronous forums. While some students did not find peer feedback beneficial for their learning, interestingly, lecturer feedback was deemed more efficient from the students'point of view.

Appendix A: Course Components

Weekly Individual Discussion	The students were assigned to read articles every week. They were expected to write a summary of the article and pose one or two question(s) to their friends. This discussion activity aimed to create engagement among the students. Before the class, they answered at least two friends' questions in the discussion forums. The instructor provided a rubric to initiate and enhance the discussions between the students (see Appendix D)
Weekly Individual Presentation	The lecturer assigned the students to present different topics every week about the educational technology field. The students were expected to choose one of the topics and make a presentation. The instructor provided a rubric. The students were expected to evaluate their peers based on that rubric and give each other feedback
Systematic Literature Review (Final Project)	The instructor assigned the learners to write a systematic literature review study about a topic of their interest as the final project. During the semester, the students submitted small parts of the final project and received feedback from the instructor and their peers
A Task with Multiple Options	The lecturer assigned different tasks as the midterm project (e.g., designing a learning theories matrix and explanation guide, expert profile, creating a script and video for an issue or trend, etc.). The students were expected to choose one of the topics. They had the option to choose a peer to complete the task as a team or individually

Appendix B: Data Collection Instruments

Observation

One of the researchers observed synchronous classes. The field notes were taken. The researchers also followed asynchronous discussions.

Interview

Semi-structured interviews were conducted online.

Documents

Peer feedback was taken after each assignment. The students completed self-reflection forms. The assignments had a thick description. Syllabus was also another instrument.

Appendix C: Interview Questions

1. If one of your friends is willing to take this course, what would you tell him or her about the course?
2. If you are asked to teach this course, which strategies that your professor used would you want to use in your own class?
3. If you are asked to teach this course, which strategies that your professor used would you want to change and how?
4. What are the aspects that distinguish this course from other courses you have taken?
5. What were the tools, resources, and directions that most helped your learning in this course?
6. What were the things you did or achieved in this class would help your education or professional goals after the class?
7. In this course, you were allowed to choose topics and tools for the projects. For example, in the systematic literature review, you could choose a topic, multiple task projects you could choose a task type, weekly individual presentations you could chose a topic, and weekly reading articles you could chose the readings.

    a. What were the advantages of selecting the things you want to work on?
    b. What were the challenges of selecting the topics or assignments?
    c. If I ask you to give an example, particularly in which project having the flexibility to choose was more encouraging for you to complete the project and why.
    d. What did you pay attention to while choosing the systematic literature review project topic?
    e. What did you pay attention to while choosing the task project?
    f. What did you pay attention to while choosing the weekly discussion topic?
    g. What did you pay attention to while choosing the reading materials?

8. Throughout this course, you were given instructions for all the activities and assignments/projects. How did those instructions help you complete the assignments?

    a. How did the rubrics given you help you achieve your goals?
    b. In breakout room activities, you were provided some roles and questions to be discussed. What do you think about the adequacy of the instructions?
    c. The rubrics for the discussion forums were provided. What do you think about the adequacy of the given instructions?
    d. What do you think about the annotated bibliography template given for the final project?
    e. You were provided some questions to guide your final project. For example, the definition of the gap questions. What do you think about the usefulness of those guiding questions?
    f. To what extent did you benefit from your readings while summarizing the topics in the weekly discussions?

9. Which methods do you think contribute to your self-evaluation of your learning process in this course?

    a. After your weekly presentation, your friends provided feedback for you. How did the weekly presentation feedback contribute to your learning process?
    b. What do you think about the feedback you received from your lecturer for the in-class final project (section feedback) to improve your project?
    c. What do you think about the feedback you received from your peers after you presented one of the final project parts?

10. What communication and interaction opportunities did this course offer with other students?

    a. How did these opportunities contribute to your learning? Could you please provide some examples?
    b. What were your criteria while giving feedback to your friends?

11. According to you, how can this course be more student-centered?

Appendix D: Rubric of Online Discussions

Primary Post		
Category	Description	Identifier
Summary	Summarizing main points from all class reading materials	Statement with examples, citations, quotes from class reading materials
Internal dialogue	Thought process you have after reading	Realizing, reflecting, comparing, contrasting
Opinion	A clearly stated personal view or attitude	Take a stance, agree/disagree, belief, argument
Justification	Reasons, facts and explanations that defend your opinion	Personal experiences, critiquing, citing external resources
Questioning	Asking a question(s) to the class	Question shared and asking for ideas
Response Post		
Category	Description	
Reference	Clearly stating the reference back to the specific points in the primary post	
Personal experience	Personal experience either validating or refuting the opinion in the primary post	
Additional information	Citing course materials or external resources	
Questioning	Asking further questions to the group or the whole class	

Data Availability Data available on request from the authors.

Declarations

Ethics Statement Informed consent was obtained from all the individual participants included in the study.

Research Involving Human Participants and/or Animals This study, which involved human participants, was in accordance with the ethical standards of the institutional research committee.

Financial Interests The authors declare they have no financial interests.

Conflict of interest The authors declare that they have no conflict of interest.

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