

Curriculum Project

**Designing An Online Critical Thinking Course in Higher
Education Through Technological Integration**

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Project Proposal

1. Problems, Background, Context, and Settings

A disease outbreak in a small town has turned into a global pandemic causing many schools to close down and 90 % of students in almost 200 countries did not have access to quality education (UNESCO, 2020). School closure was also an issue in Cambodia (Chheng, 2020), which has led to a radical transition to online learning (Tum, 2020). This change has been a concern for many educators regarding students' learning experience, especially when it is difficult for important aspects of learning, such as engagement and students' participation, to occur.

At a university in Cambodia, this issue has also been a challenge for many educators. However, this has become a bigger challenge for a critical thinking course at the university. Critical Thinking Course, the first alone undergraduate critical thinking course in Cambodia, was piloted in the second semester of 2020 by a group of lecturers at the university. The purpose of the course is to develop students' ability to analyze, interpret, and evaluate beliefs and arguments in various settings including fiction, non-fiction, daily life, and academia. Turning this course into an online course during the pandemic can be a problem as many of the lecturers who piloted the course are no longer in the institution, and many lecturers assigned to teach the course do not have considerable experience teaching online. In this project, a learning management system called, Canvas, will be used to collaboratively produce online learning content and activities to support the newly assigned critical thinking lecturers. The course adopts a hybrid between synchronous and asynchronous modes of teaching. The course lasts three hours per week, two hours of which will be synchronous, and the other hour will be asynchronous. In the synchronous session, students will access the classroom through Microsoft Teams Video Conferencing Tool, while the

asynchronous part of the session includes different content and tasks for the students to complete before the next synchronous session.

2. Target Audience

The target audience of the critical thinking course at the university are third-year or junior-year undergraduate students in the English Department ranging from the age of 19 to 25. As English is the medium of instruction, students are expected to possess intermediate to upper-intermediate levels of English language proficiency. All students have sufficient equipment and internet access to take the course although there might be some occasional internet disconnection problems.

3. Educational Objectives

In this project, Canvas, a learning management system called Canvas, will be used to create learning environments for the critical thinking course. The learning environments are expected to:

- Enhance students' engagement and participation in both synchronous and asynchronous sessions of the course
- Enhance students' performance and promote positive learning outcomes

4. Teaching Critical Thinking and Learning Theories

There might not be one best way to teach critical thinking; however, engagement and active interactions appear to be important elements in a critical thinking class. Dr. B. Jean Mandernach (2006) preferred learner-centered approaches and student engagement in teaching critical thinking over traditional passive ways of teaching. This is aligned with the theory of constructivism and experiential learning. Ernst von Glasersfeld (1986) stated that the process of learning does not involve transferring knowledge in the external world into the students' memory, but it is the

process of students' interpreting their experience and interaction in the world according to the theory of constructivism. John Dewey (1986) believed that traditional passive classrooms with receptive learners may not be an effective teaching approach. Instead, he introduced the concept of experiential learning, which emphasizes learning by doing and interacting with the environment and content. This concept has been further studied and advocated by other researchers, stating that an active engaging learning experience is more likely to motivate students and help them remember what they have learned (Freeman et al., 2014; Springer, Stanne & Donovan, 1999). Engaging experiential learning classrooms may include role-playing, simulations, debates, and discussions. Sharon (2003) also favors classroom discussions, case studies, and interaction between teachers and students for teaching critical thinking. Dewey (1986) mentioned that for students to remain active in class, there should be interactions between students and teachers, and the communication in class should not be one-sided. Although students are in control over their own learning, teachers may still play a role of providing suggestions and guidance to facilitate their learning. Moreover, Jean Piaget's work also extends the role of teachers to creating learning environments that promote thinking, social interaction, and continuous evaluation of students' progress (Piaget & Cook, 1952). Similarly, Vygotsky and Michael Cole (1978) introduced the concept of scaffolding, which refers to a process of providing assistance and guidance to students as they understand the learning points better.

5. Course Design

Based on the findings, principles, and theories discussed above, three important design elements will be incorporated into the course design:

i. Creating an engaging, collaborative, and learner-centered learning environment

As engagement, collaboration and learner-centered tend to be absent in remote learning yet very important for learning, this course design aims to preserve these aspects through utilizing different functions available on Canvas and integrating external tools into the platform. The application of functions and tools include:

- a) **Discussion Forum:** this function allows lecturers to start a discussion by introducing a scenario, a case study, or an opinion for students to interpret, analyze, and evaluate. Lecturers can also respond to students' answers, provide guidance, and enhance students' understanding. Vygotsky and Cole (1978) stressed the importance of continuously providing assistance according to students' understanding through a process called Scaffolding.
- b) **Perusall:** This course may require students to read different thinking strategies and case studies, and reading may not be enjoyable for some students. However, reading can be more engaging through Perusall, a platform that enables students to collaboratively annotate or give comments on reading materials and respond to each other's annotation or comments. This helps students construct their knowledge through interacting with other students and exploring different interpretations.
- c) **Edpuzzle:** Various videos will also be produced for asynchronous sessions of the course. Edpuzzle can make videos more engaging and enjoyable by adding some pop-up questions or notes at different points in the videos. Students will be able to experience and interact with the content in the video instead of passively watching the video.

ii. Provide means that allows lecturers to continually access students' performance and understanding of the lessons

It is important for lecturers can get a better picture of students' understanding as learning takes place (Piaget & Cook, 1952). This assessment allows teachers to provide assistance accordingly. This can be done through:

- a) Canvas Quizzes: This is a tool available on Canvas for lecturers to create weekly or biweekly quizzes according to the content for the asynchronous portion of the course.
- b) Nearpod: This tool can be used for synchronous classes which enable teachers to use different assessment tools as the lesson is being taught to receive the information regarding students' understanding in real-time.

iii. Create a user-friendly platform for lecturers and students

The design elements center on providing an intuitive navigation system for students and lecturers to take full advantage of Canvas. It may involve creating different pages, including a home page, course syllabus, attendance page, course description, and contact information. All the pages will be populated with interactive buttons for students and lecturers to access the important information they need for the course.

6. Possible Challenges and Success

There are a number of possible challenges. First, the limited teachers' experience in online teaching and technical skills may be an obstacle. This may require longer training sessions and more workshops to ensure the effective implementation of the project. Second, time constraints may also be a problem. There are less than five months available for the project to be implemented, and many lecturers also are responsible for teaching at least two other courses in the program. However, collaboration and training can be time-consuming.

In spite of the challenges, the success of this project may indicate more effective and engaging online critical thinking courses with more interactive content that enhance students' learning experience.

Reflective Journal and Implementations

Stage 1: Training Workshop

Participating critical thinking lecturers and professors were invited to attend a one-week training workshop comprising five training sessions providing the faculty members with some basic knowledge required to use Canvas. The workshop included two in-person training sessions and the other five sessions are conducted through videoconferencing. The workshop is followed by continuous collaboration among lecturers throughout the course to create content, such as quizzes, interactive videos, and other course materials. The following is the content of each training session:

- Session 1: Creating a Free Account on Canvas and Canvas Overview
- Session 2: Course Organization and Page Design
- Session 3: Assessment: Assignments and Quizzes
- Session 4: Using communication tools: Inbox, Appointment, and more
- Session 5: Other Tools: Nearpod, Perusall, and Edpuzzle

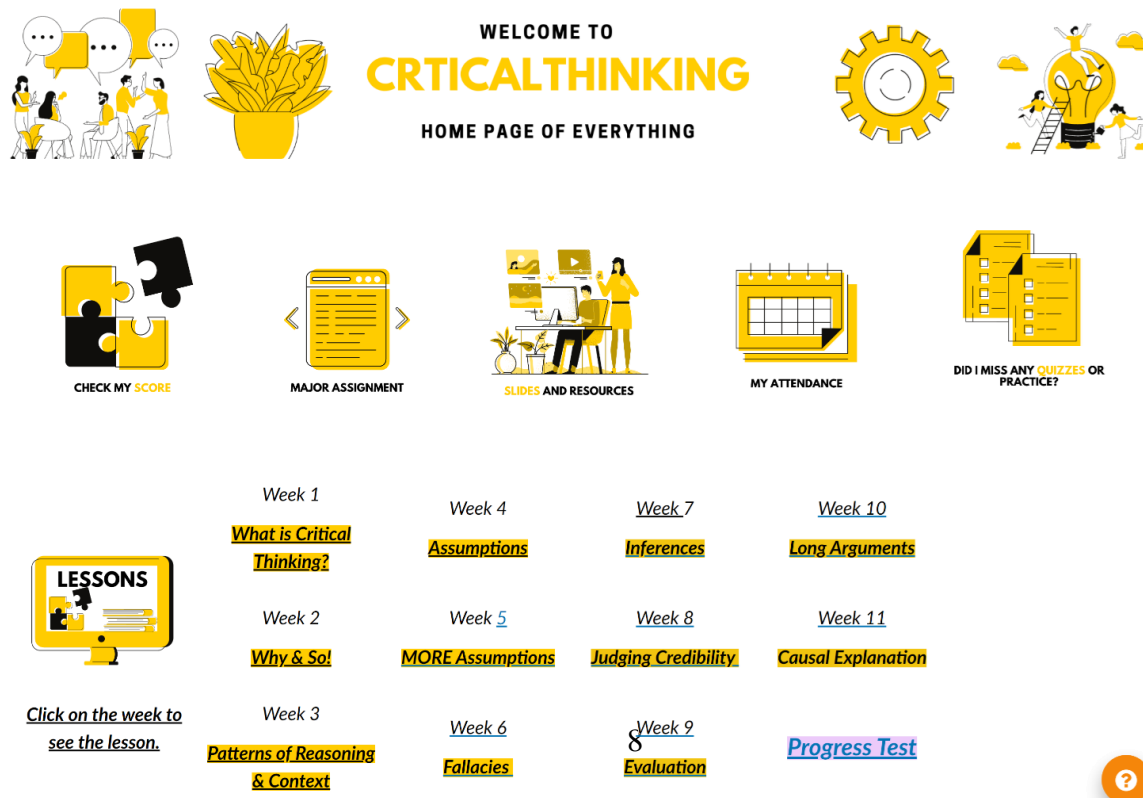
After each session, each faculty member was asked to write down at least two questions they had in order to assess their needs. The faculty members seemed to express more concern over the use of quizzes and question design. Therefore, Session 4 was redesigned to include some more features related to Canvas Quizzes in addition to content related to using Canvas communication tools.

Stage 2: Recreate course homepage and navigation system

In terms of the course homepage, it is important to adopt a simple and intuitive navigation system. A study by Susan K. Miller-Cochran (2006) shows that students prefer a simple design with clear labels and icons for them to follow. Moreover, Candice-Ann Kar On Lee (2016) has applied Universal Design Principles to Canvas Course Design and stressed the importance of simple course design. The study suggests that the homepage should include icons and simple texts describing the icons instead of making students find the important information through the Canvas default navigation pane. Therefore, the course homepage has been designed by all participating faculty members to allow students to navigate through important elements of the course, such as different modules, major assignments, slides and resources, attendance reports, quizzes, and grades. Those elements are attached with links icons and texts that can simply depict the purposes of the elements as shown in Figure 1.

Figure 1 Canvas Home Page of Critical Thinking Course

Home Page



Stage 3: Course Content Development and Students’ Feedback

The Critical Thinking Course comprises of 15 weeks of instruction. Each week, faculty members will have to work collaboratively to create course content for both the synchronous session and asynchronous session. However, faculty members may make necessary changes to the content to meet their own students’ needs. For the first five weeks, I attended the meetings and monitor the collaborations and content creation in the sandbox course to provide help and support as needed. Every four weeks, students were also asked to complete a survey to share their experience in the course as faculty members had agreed that three weeks will give students time to be accustomed to the course and provide sufficient information related to their experience. At the end of the course, students were also required to complete the end-of-course evaluation of the faculty members’ teaching as well. The following is the table containing the description of the activities over the 15-week period. In order to protect the private information of the faculty member, students, and the university, some information related to participants and the course has been omitted from the table.

Table 1:

Weeks	Tasks	Reflection
Week 1	<ul style="list-style-type: none"> - Introducing students to the course - Introducing students to Canvas and enrolling students in the Canvas course - Creating a module to provide information on navigating through a Canvas course 	<ul style="list-style-type: none"> - Some students had difficulty signing up for Canvas. <p>Resolution:</p> <ul style="list-style-type: none"> - Provide a direct signup link and a tutorial video for those who have not signed up
Week 2	<ul style="list-style-type: none"> - Creating content for the first lesson using: Discussion Forums and Edpuzzle 	<ul style="list-style-type: none"> - All faculty members followed the posted tutorial and used API to connect Canvas with Edpuzzle successfully - Students understood the concept of discussion forums and

		interactive videos and completed the work successfully
Week 3	<ul style="list-style-type: none"> - Creating content for the lesson using Nearpod, Edpuzzle, and Discussion Forum 	<ul style="list-style-type: none"> - Some faculty members failed to give effective direction for students to join the session through Nearpod. <p>Resolutions:</p> <ul style="list-style-type: none"> - Sharing a model direction slide with faculty members
Week 4 (Survey Week)	<ul style="list-style-type: none"> - Creating content for the lesson using Nearpod and Discussion - Use Canvas Quizzes to create practice exercises. - Creating a survey for students to complete at home to evaluate their learning experience 	<ul style="list-style-type: none"> - Some students did not complete the survey. <p>Resolutions: Planning to conduct the survey in class instead to obtain more data</p>
Week 5	<ul style="list-style-type: none"> - Creating content for the lesson using Nearpod, Discussion, and Perusall. - Perusall is used for students to give comments as they read and analyze a case study in the asynchronous portion of the class 	<p>The survey indicated that:</p> <ul style="list-style-type: none"> - Most students enjoyed using Canvas, Edpuzzle, and Nearpod as far. - Some students requested more practice on the exercise. <p>Resolutions: Asking faculty members to collaborate and create a question bank.</p>
Week 6	<ul style="list-style-type: none"> - Faculty members created content without my support - Creating content for the lesson using Nearpod, Edpuzzle, and Quizzes - Create a survey for students to complete in class 	<ul style="list-style-type: none"> - Faculty members and students did not have any significant issues so far. -
Week 7	<ul style="list-style-type: none"> - Creating content for the lesson using Assignments, Quizzes, and Nearpod. - A group assignment has been created through Canvas Assignments. 	<p>Some faculty members mistook the communication space used for communication among members within the same group for the main Canvas course page.</p> <p>Resolutions: Explanation and clarification were given to faculty members.</p>
Week 8	<ul style="list-style-type: none"> - Creating content for the lesson using Edpuzzle and Nearpod 	<ul style="list-style-type: none"> - Many students have difficulty editing the page to sign up for

<p>(Survey Week)</p>	<ul style="list-style-type: none"> - Faculty members would like to create an editable page for students to sign up for group presentation dates. 	<p>group presentation dates as many of them did it simultaneously.</p> <ul style="list-style-type: none"> - More responses were received compared to the previous survey <p>Resolutions: Showing faculty members how to embed the Google Sheets page or Microsoft Excel page to the assignment page for students to sign up in real-time.</p>
<p>Week 9</p>	<ul style="list-style-type: none"> - Creating content for review and preparation for the course's progress test - Providing instruction on the open-book progress Test 	<ul style="list-style-type: none"> - Although many students asked a lot of questions regarding the procedure of the progress test, faculty members handled the questions very well. However, some students requested one more review session as the majority of class time had been dedicated to answering questions about the test. <p>Resolutions: Providing a mock test session the following week to familiarize students with the Canvas timer and the question types included in the progress test.</p> <p>The survey indicated that:</p> <ul style="list-style-type: none"> - Students enjoyed using all the Educational Technology applications in the course - Students requested all content to be unlocked in advance on Canvas <p>Resolutions: Although some modules were created in advance, it is not possible to publish them before the class starts as they need to be reviewed by the faculty member team before doing so.</p>
<p>Week 10</p>	<ul style="list-style-type: none"> - Creating content for the mock test session 	<p>There was not any significant problem so far.</p>
<p>Week 11</p>	<ul style="list-style-type: none"> - Creating content for the progress test 	<p>There were some problems with the questions that may result in changing the correct answer to the questions.</p>

		<p>Resolutions: Faculty members were advised to make an announcement to the class in the following week and shown how to change the answer for the questions on Canvas Speed Grader, a tool used to grade students' work on Canvas.</p>
<p>Week 12 (Survey Week)</p>	<ul style="list-style-type: none"> - Creating content for the lesson: Nearpod, Perusall, and Edpuzzle - Creating content for the progress test for those who missed the test - Conducting the survey 	<p>Faculty members successfully assigned the test with a different timeframe for the students who had missed the test.</p>
<p>Week 13</p>	<ul style="list-style-type: none"> - Preparing for students' presentation 	<p>Faculty members successfully made use of the Canvas Rubric Function.</p> <p>The survey indicated that:</p> <ul style="list-style-type: none"> - Students have been enjoying their learning experience so far. - Students said that their learning experience can be disrupted by low internet connection <p>Resolutions: Avoid using rich content or large-size files on Nearpod or content on Canvas.</p>
<p>Week 14</p>	<ul style="list-style-type: none"> - Creating content for the lesson: Nearpod and Discussion forums 	<p>Faculty members accidentally copied the wrong content overwriting the existing quiz.</p> <p>Resolutions: Faculty members were introduced to the Beta environment of Canvas to retrieve the quiz.</p>
<p>Week 15</p>	<ul style="list-style-type: none"> - Creating content for the review session before the final examination - Explaining final examination procedures - Conducting end-of-the-course survey 	<p>The final examination would be conducted on a different platform; therefore, any issues or concerns are not addressed here.</p>

Conclusion

The pandemic may have been a blessing in disguise as it provided me with the opportunity to introduce a more engaging teaching experience to faculty members and learn many aspects from this collaboration. Although only a few educational technology applications were used in the course, students did not seem to lose interest over time, perhaps due to the wide variety of content produced by the faculty members whose creativity was utilized through the applications. The anticipated challenges were not as challenging as anticipated. It was possible to cut down the training to only one week as the support continued to be provided after the workshop for five weeks, which was sufficient for the faculty members to learn and create content independently as well. This project can be considered a success as all participating faculty members received a high approval rating from the end-of-semester evaluation and students' average score was higher. This project would not have been possible without the participation and dedication of the faculty members.

However, there are some limitations to this project. Although it seems efficient and productive for faculty members to work collaboratively in the sandbox course to create course content, many of them decided to stick with the course content as it was created instead of making changes to fit their students' needs or the nature of the class. Moreover, simple design may indeed help students navigate through the course content and enjoy accessing the course online more, but it can be quite difficult to strike a balance between creating a simple design and making use of the sophisticated functions of the learning management systems. The more functions the faculty members would like to take advantage of with their creativity, which is encouraged in the project, the more complicated the design will be. According to Piaget and Cook (1952), learning about the extent of students' understanding is important as they are learning. Assistance can be provided

according to their learning (Vygotsky & Cole, 1978). However, in practice, it can be difficult to achieve when the class is big, making it almost impossible to provide assistance that meets everyone's needs. Therefore, in future projects, it is possible to allow more time for preparation. As faculty members are familiar with Canvas, they may be able to reflect on their experience in the prior semester and make changes according to their students' feedback and experience using Canvas in the survey. They also may have more time to focus on preserving simple design while more complicated functions are being used. In addition, although it is important to provide immediate feedback, it can be difficult to do so in a big class. Therefore, a potential future project can explore the use of faculty members' office hours for students to attend with questions they have or support they need as members' consultation sessions with students do not exist in the institution. A study on this project may be able to shed some light on the potential benefits of such practices in Cambodia's higher education.

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