HLRC | HIGHER LEARNING RESEARCH COMMUNICATIONS

Higher Learning Research Communications
2024, Volume 14, Issue 1, Pages 103–120. DOI: 10.18870/hlrc.v14i1.1469

Original Research

WALDEN UNIVERSITY

How Faculty and Students Understand and Experience the Development of Critical Thinking in the Online Classroom

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Abstract

Objectives: There are essentially three schools of thought regarding critical thinking—humanistic, cognitive, and behavioral. Given the disagreement among them, confusion continues about what critical thinking means, and how it can be taught to students.

Methods: In this qualitative phenomenological study, researchers interviewed students and faculty in a distance education master of public health program about their perceptions and experiences of what critical thinking means and how it is developed in the online classroom.

Results: Themes emerging from student interviews included (a) differing thoughts on the meaning of critical thinking; (b) learning and meeting course requirements as students' primary role; (c) technology as useful in learning; and (d) confidence in learning linked to engagement, feedback, and course alignment. Themes from faculty interviews included (a) how online classrooms promoted critical thinking; (b) critical thinking identified when students demonstrate the application of independent thought; (c) facilitating and keeping students on track as faculty's primary role; (d) promotion of critical thinking through questioning and student collaboration; (e) assessment of critical thinking through discussion posts; and (f) faculty facilitation and focus on application as essential to student learning.

Conclusions: Students and faculty engaged in the online classroom agree in some ways that critical thinking skills are gained through practical applications. But this is where agreement ceases. Students believe they are developing critical thinking skills in their online environments, when in fact they are reproducing rote information in assignments.

Implications: Engaging in activities has been shown to develop critical thinking more effectively when it is

accompanied by mentoring, dialogue, and authentic instruction. Online educators who want to help students develop their critical thinking skills can use mentoring, dialogue, and authentic instruction alongside online activities.

Keywords: *critical thinking, online learning, teaching critical thought, learning critical thought*

Date Submitted: August 9, 2023 | **Date Accepted:** May 15, 2024 | **Date Published:** June 18, 2024

Recommended Citation

Peoples, K., Correa, C. T., & Burkholder, G. J., (2024). How faculty and students understand and experience the development of critical thinking in the online classroom. *Higher Learning Research Communications, 14*(1), 103–120. https://doi.org/10.18870/hlrc.v14i1.1469

Introduction

There are three schools of thought regarding critical thinking. Philosophers view critical thinking as an intrinsic aspect of the human thought process (Lai, 2011) and propose certain cognitive skills and dispositions as necessary to it (Danczak et al., 2017). This school of thought views critical thinking as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation for the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 2). A good critical thinker is characterized by certain traits, including being inquisitive, open-minded, flexible, and fair-minded, as well as having an interest in being informed and being able to understand diverse viewpoints, suspend judgment, and consider other perspectives. A critical thinker also has the disposition to strive for engagement while promoting critical judgment in others (Danczak et al., 2017). Scholars of philosophy discuss other qualities a critical thinker would have, such as a quest for adequacy and accuracy (Lai, 2011).

A second school of thought approaches critical thinking through a cognitive psychological focus on how individuals think (Lai, 2011). Through the lens of cognitive psychology, critical thinking involves being engaged in problem-solving, formulating hypotheses or judgments, and calculating possible conclusions in decision-making (Halpern, 2001; Wang & Zheng, 2016). Critical thinkers are also able to successfully monitor how their critical thinking may be affected or skewed by their emotions (Bensley et al., 2016). They assess competing arguments about an issue as they assert probability into their thinking, rather than being tied to one belief from an emotional connection (Danczak et al., 2017).

The third school of thought about how to understand critical thinking comes from educational practitioners. Through the observation of specific behaviors in students, educators assess critical thinking skills by using the time-tested model of Bloom's taxonomy (Lai, 2011). Specifically, they utilize its last three levels—(4) analysis, (5) synthesis, and (6) evaluation—of thought processes (Dressel & Mayhew, 1954, as cited in Danczak et al., 2017). They believe that critical thinking is developed by applying knowledge in a practical setting (Danczak et al., 2017).

Each school of thought has criticisms of how critical thinking is defined. Philosophers often examine critical thinking in terms of people's ideals rather than their abilities. Cognitive psychologists are often too reductionist in their steps to understanding critical thinking, and educational practitioners often fail to provide procedures for how to teach and assess critical thinking (Lai, 2011). While these three disciplines differ in many ways, they nevertheless agree that critical thinkers: (a) ask clarifying questions, b) are interested in defining terms, (c) identify assumptions, (d) interpret and explain, (e) use reason, (f) predict, (g) see both sides of an issue, (h) analyze, (i) use inductive and deductive reasoning to make inferences, (j) judge or evaluate, (k) make decisions, and (l) solve problems (Lai, 2011).

Student Perceptions and Experiences of Critical Thinking

Students have historically reported that critical thinking allows them to understand concepts, improve life decisions, embrace diverse views, connect to what they are learning, and recognize and question what is valid (Sng, 2011). They believe that critical thinking is best developed through real-world scenarios and research-based activities (Danczak et al., 2017). Students desire clear definitions of critical thinking and want educators to be more transparent in their teaching methods (Kressler & Kressler, 2020). Students agree that certain classroom activities are effective, but when the novelty wears off, teachers are often left struggling to keep their students engaged (Nguyen et al., 2016). Even more problematic in the classroom is that students are more concerned with their grades than the actual information presented, due to the fear of failing. Because of its competitive nature, the learning culture keeps students focused on their grades, as they compete to make it to the next level, rather than on the course material. While students understand the benefits of critical thinking, the reward of a good grade is seen as more important (Kressler & Kressler, 2020).

Culture also plays a part in student perceptions of the value of critical thinking. In Asian cultures, challenging elders' teachings is discouraged, inside or outside of the classroom, and students from communist countries are encouraged to recite what is taught rather than synthesize information (Sng, 2011). Students in the West are taught to focus primarily on lectures and to memorize facts (Kressler & Kressler, 2020; Stedman & Adams, 2014), despite memorization being regarded as a lower level of understanding (Athanassiou et al., 2003).

Though they admit the value of critical thinking, students struggle with wanting to change their current learning expectations, due to their comfort levels and familiarity with them (Kressler & Kressler, 2020; Stedman & Adams, 2014). In fact, students who are pushed to take more active roles in their learning may experience anxiety (Cooper et al., 2018). However, students find value in different teaching styles, such as the flipped classroom, to promote deeper learning, even when they perceive this deeper learning style to be more work (Nguyen et al., 2016).

Teacher Perceptions and Experiences of Critical Thinking

Teachers have a history of unsound knowledge regarding the meaning of critical thinking, making it problematic to teach critical thinking to students (Stedman & Adams, 2012). Even more, teachers do not agree with students on what they believe is useful in developing critical-thinking skills, because teachers focus on evaluation, goal orientation, and use of logic (Danczak et al., 2017). Students yearn for application of their learning in developing critical thinking skills, and the literature overwhelming agrees with this notion, reporting that employers are seeking graduates with critical thinking skills (Kraus et al., 2013).

Academicians have argued throughout the years over whether critical thinking skills can be taught and then applied to post-graduate situations, thus satisfying the demands of employers (Danczak et al., 2017). While utilizing critical thinking skills in the classroom and applying that learning to real-world situations can be challenging (Pearl et al., 2019), it is certainly possible. Critical thinking must first be clearly defined for educators, for only then can educators effectively teach students how to use critical thinking skills to evaluate information and make critical judgments based on facts (Schmaltz et al., 2017).

Critical thinking skills improve when students recognize those skills as beneficial (Kressler & Kressler, 2020). Hence, educators must first clearly outline for students the goals of learning, how to process information, and the intended outcomes of critical thinking so that students can see the benefit of learning (Reynders et al., 2020). Utilizing activities that promote discussion in the classroom, as well as including activities involving small groups in the use of real-world situations through which students can role-play, will help educators develop critical thinking skills in their students. One example of this kind of real-world learning is problem-based learning (PBL). PBL educators use case studies and real-world examples that students may face in their fields to test their critical thinking skills, through online learning and face-to-face instruction (Goodsett,

2020). Another set of tools teachers can use to assist students in mastering critical thinking is specific grading rubrics that address critical thinking skills. Rubrics provide educators with a straightforward plan to assess and provide feedback on critical thinking skills (Reynders et al., 2020). They also provide students with clear and measurable expectations, so that students can participate in practical learning experiences with assurance that they are meeting course requirements.

Studies that emphasize the importance of teaching critical thinking are widespread in education literature, but they rarely examine the experiences of educators and students in understanding what critical thinking means to them. The purpose of the present study is to examine the experiences of faculty and students in understanding what critical thinking means in the context of online learning. The research question that drives this qualitative study is: What are the perceptions and experiences of faculty and students in understanding what critical thinking means and how it is developed in the online classroom?

Method

The present qualitative, phenomenological study was part of a larger study examining student engagement and critical thinking in the online classroom. The study was conducted as part of a David A. Wilson Excellence in Teaching grant at the authors' institution. The research was approved by the University of Liverpool (Online) International Online Research Ethics Committee, where the primary research was conducted (approval #04-24-2015-01).

Participants

The principal researcher requested a list of teachers of two master of public health (MPH) online courses: Managing Health Systems and Leading and Managing Health Systems. The MPH had been recently revised and upgraded, and Leading and Managing Health Systems was the upgraded version of the original course. Both courses were modified to reflect state-of-the-art practices in online learning and engagement. Faculty participants were recruited from both, as the research team was interested in any faculty who taught in both programs and could offer comparisons of the effectiveness of engagement in critical and higher-order thinking. To recruit students, the principal researcher requested a list of all students in the MPH program who had successfully completed both courses. Of all faculty and students contacted, six faculty and five students agreed to be interviewed.

Procedure

Participants who agreed to be interviewed were provided written informed consent indicating the general purpose of the study, that their participation was voluntary, that they could withdraw participation at any time, and that their participation would be confidential. The interview protocols, which focus on online classroom experiences, are presented in the Appendix. Two research assistants were trained to conduct the interviews using the developed protocols. All interviews were conducted either via telephone conference call or Skype; in both cases, interviews were audio recorded. Digital files were uploaded to a transcription service (www.Rev.com). Once transcriptions were returned, the person who conducted the interview reviewed the transcript and the audio recording to ensure accuracy of transcription.

Analysis

The first step was reading the entire transcript of the individual interview in order to get a sense of the entire description. After reading the entire transcript, the analyst broke it down into preliminary "meaning units," (Giorgi, 1985, p. 10) focusing on the topic being investigated. A meaning unit is the delineated portion of the

data identified as a revealing characteristic of the phenomenon under investigation. Irrelevant information, such as repetitive statements that were not necessary for analyzing the data, was deleted.

Final meaning units, which were informed by the researcher's deepened sense of the entire description, were then created for each of the interview questions. Rewriting the meaning units in psychological terms was the next major step. The term "psychological" is utilized within an existential–phenomenological framework, and issues of personal meaning and worth are the focus. A word such as "self-reflection" may not have been used by a specific respondent but may be introduced, in order to provide a psychological understanding of the description.

The rewritten meaning units were then synthesized into a description of each participant's experience as an entire thematic description. This situated narrative (Giorgi, 1985) was a retelling of each participant's story where details and events were organized, and the meanings of each participant's experience were thematically highlighted. A general narrative was created from the situated narratives where the accounts of the subjects were unified into a general description of the participants' narratives (Giorgi, 1985). The focus of this step was to organize the data collectively from the situated narratives, jointly highlighting the meanings of the participants' experiences.

As the researcher reflected on the various themes and turned participants' narratives into units of meaning, an essential attitude was adhered to (Wertz, 1985). The five aspects of reflections developed by Wertz and employed by the researcher analyzing the data are outlined below and are neither linear in nature nor separate from each other. Instead, they overlap and profoundly involve each other. In reflecting on the data, the researcher:

1. Immerses in the descriptive world in an empathic way. That is, the researcher lives through the participants' descriptions as if they were her own.
2. Slows down and dwells on each narrative. The researcher does not pass over the details of the account as if she understands it already but dwells upon the details of each situation described.
3. Magnifies and amplifies each situation. Each description, even what may be a minute explanation for the subject, is of great importance to the researcher. The researcher must transcend the mundane nature of each description.
4. Breaks the initial fusion with the participant (immersion) and takes up an intense interest in the origin, interactions, and general structure of the subject's lived experience. Where is the participant? How did he or she get there? What does it mean to be there?
5. Makes meaning. The facts of the accounts are turned into what those accounts mean for the participant and the "particular participation in terms of which such meanings arise" (Wertz, 1985, p. 175).

Results

Saturation was reached after five students were interviewed for this study. The time that they had been taking online classes spanned from 1.5 years to 2.5 years. They responded to several questions and prompts. Some examples are: (1) When teachers talk about "critical thinking," what does this mean to you? (2) Tell me if and how you know that you and other students are using critical thinking skills. (3) Describe your experiences with the online classroom in terms of how its overall design promotes or does not promote critical thinking. In addition, to gain more context about students' learning attitudes in the online classroom, students were asked to respond to the following prompts: (4) What do you consider to be your role and responsibilities in the classroom as a student? (5) Please describe your experience during a typical day or week in the online

classroom. (6) Please describe your experiences using technology in the online classroom. (7) Please describe the things that happen in the classroom that give you confidence that you are learning the information. The complete list of questions is in the Appendix.

Saturation was reached after six faculty were interviewed for this study. The range of time they had been teaching spanned from 2 years to 10 years. They responded to several questions and prompts, including: (1) What does it mean to demonstrate critical thinking? (2) Please describe the things you do as a teacher to promote critical thinking in the classroom. (3) Describe your experiences with the online classroom in terms of how its overall design promotes or does not promote learning and critical thinking in students. (4) Please describe the things that happen in the classroom that give you confidence students are learning. How do you know learning is occurring? In addition, to gain more context about faculty's experiences with students in the online classroom, their knowledge about teaching, and their attitudes, faculty were asked to respond to the following prompts: (5) What training have you had to prepare you to teach online? (6) What would the ideal online classroom look like in your opinion? (7) Describe the ways you experience students' differences in the classroom. (8) What do you consider to be your role in the classroom as an instructor? The complete list is in the Appendix.

Below, we present the key themes that emerged, with supporting quotations from students and faculty. Themes are meaning units that loaded in similar areas and reached full saturation. Following the themes are the general summaries for students and for faculty. In these summaries, themes and meaning units were compiled to offer a composite representation of both students' and faculty's experiences of critical thinking in the online classroom. The word "most" represents a saturated theme, "many" represents a meaning unit that was half-saturated, and "some" represents a meaning unit that did not saturate but was noteworthy to present within the summary.

Student Themes and Supporting Quotations

Theme 1: Differing Thoughts on the Meaning of Critical Thinking

Most student participants differed in terms of their thoughts about what critical thinking means. Many thought that providing references to back an argument and critical analysis were both indicative of critical thinking. Some thought that application and synthesis were elements of critical thinking. Most student participants knew that they and other students were using critical thinking skills when they critically analyzed arguments. Many thought that they were using critical thinking skills when they used more references to back their arguments or when they demonstrated that they could look at different perspectives on a topic or argument.

Thorough Research

"You sit down to actually verify all those claims."

"The topic, you need to research it thoroughly. Search some more literature other than the suggested reading, read, read, read."

Synthesis

"Think what is important and common in all and try to fit the idea learnt from several papers into the topic of assignment or topic of discussion."

Application

"I look at various scenarios, and I raise questions or raise ideas. I would situate it in my environment and find answers to issues."

Critical Analysis

"Analyze issues. Analyze ideas. Analyze theories and arriving at reasonable judgments."

"Not accepting theories, not accepting opinions, which means you have to criticize such ideas. Criticize even your own personal opinion. Criticize even your own personal submission."

"It means analyzing something, in-depth analysis."

Author Intention

"When reading something, thinking about what the author is wanting to achieve. What were the underlying motives for the author? What in the text supports or doesn't support the view that's being put [forth]? Really analyzing why something might have been written, whether the information that was given really satisfies the need that it was written for."

Using References

"Other students also used lots of references for their arguments. That could indicate critical thinking."

"Sometimes you would read something, and it would immediately make you want to go and read something else or to look into something supporting that topic or something written around that topic and sort of want to make you research it further."

Seeing Different Perspectives

"Looking at that issue from one perspective and another student from the class beginning to look at the same issue in a different perspective."

"To be able to think more critically and begin to see things in different perspectives."

"Look at the various perspectives and make some inferences."

Theme 2: Student's Primary Role to Learn and Meet Course Requirements

Overall, most student participants believed that their primary role as a student was to learn. They considered their responsibilities in the classroom to be attendance and participation, being prepared with required readings, and engaging in the discussion forums. Many student participants thought that they were responsible for completing course assignments, learning from other students, and being respectful to others online within their student roles.

> "Learn new things in each class with the help of tools in the classroom like literature reading."
>
> "My role is to be a learner."
>
> "Being prepared in terms of any reading that has to be done, any pre-reading."
>
> "Do all the work which I am supposed to do."
>
> "I have a responsibility to the teacher, clearly, to make sure I submit."

Theme 3: Technology as Useful in Learning

Student participants had a broad range of experiences with technology. Many reported that internet speeds often inhibited their use of course technology. Many students found technology in the classroom easy to use, but some technologies took students more time to learn than others. Many student participants stated that video and audio technology was helpful to their learning.

> "The discussion board and the emails to me have proven more useful. I like to reach my classmates through emails."

> "In terms of the videos in the class, they have helped in connecting the student with the instructor. When you listen to the video, either audio or visual, it connects you more to the instructor … as if your instructor is standing before you and is teaching you."
>
> "We had a group PowerPoint presentation in few modules and working in a team was very useful. Many people are good at many things and we get to learn these all from them."
>
> "Getting the references from the [reference online] library was not difficult as working in research here. I knew the different sites and ways references could be extracted."

Theme 4: Confidence in Learning Linked to Engagement, Feedback, and Course Alignment
Most student participants stated that they felt confident that they were learning when the discussions with their student peers and faculty were stimulating and interesting. Many student participants felt confident in their learning when the discussions were linked to the course assignments, while many others stated that faculty engagement in the discussions gave them confidence that they were learning. Faculty feedback in grading was also something that many student participants noted as important in their learning.

> "When, be it a comment or a submission or an assignment that is posted either to the instructor or the group in general, it kind of hits a nerve. Then it raises a lot of interest and a lot of feedback and a lot of discussions."
>
> "We would be able to push each other and question each other's thinking around the topic."
>
> "I found a lot of the discussion forums led directly into the assignment that week so before the discussion, I would feel like I didn't really understand the topic or I wasn't sure about it, and by the end of the units, I was able to complete the assignments."
>
> "I would know if I wasn't performing as they expected because they would kind of prompt me quite often within the blackboard, and I found that very useful and very helpful because it was (a) encouraging to think more and to read more and direct my reading to something that was relevant and useful and (b) it would guide me to whether I was achieving what I was needing to achieve."
>
> "Feedback from the instructor with regards to the assignment probably reinforced learning, whether I felt I'd learned or whether I had really understood the topic."

Faculty Themes and Supporting Quotes

Theme 1: Critical Thinking Identified When Students Demonstrate Application and Independent Thought
Faculty participants stated that their students demonstrated critical thinking when they were able to apply course information to their professional lives or to practical situations. Independent thinking was also indicated as a sign to faculty participants that students were developing critical thinking skills.

> "In this professional learning, in a specific reflective part of the program, students are writing and thinking and reflecting about the impact of the studies on their personal and on [their] professional life."
>
> "They're able to take that information and apply it."
>
> "They are able judge what is feasible in real-life settings and can identify and demonstrate how they will apply the takeaways in practice."
>
> "When they also share on how what they have learned has been useful or practical for work."

Theme 2: Faculty Primary Role to Facilitate and Keep Students on Track
Faculty participants stated that their roles were primarily about facilitation. They stated that it was their

responsibility to keep students on task, provide feedback, answer students' questions, and stimulate critical thinking. Many faculty members stated that their role encompassed encouraging student collaboration and stimulating discussions among their students.

> "Well, my role as an, I would not call myself an instructor, I would rather call myself a facilitator."
>
> "I do not instruct in that narrow sense that I tell people what is wrong and what is right, but rather try to facilitate discussions around certain topic areas."
>
> "I'm not an instructor, I don't give answers. I'm a facilitator. I ask questions."
>
> "As an instructor, my role is to facilitate students' learning. These are adult learners."

Theme 3: Promotion of Critical Thinking Through Questioning and Student Collaboration

Most faculty participants stated that they promoted critical thinking in their students by asking them questions and encouraging student collaboration. Many faculty participants stated that they felt it was important to require their students to provide more evidence or references to back their work. Others incorporate the use of real-life scenarios to apply information in a practical way to promote their students' critical thinking.

> "The faculty have a big impact as well, because when you identify students who are using their critical skills, you can probe them a little bit more so that they can get a little bit more depth about what they are discussing. What I found was that when I put in a question, it's almost like students [think], 'Oh, I have to respond to this'."
>
> "Socratic questioning. I never ask the students a question that will give me a one-word answer."
>
> "Just through probing them so that we can encourage a greater depth of analysis. So, it's not that they're just regurgitating information. We want to know that they're also developing analytical thinking skills that they can actually probe the issue in depth. And that they know what the underlying assumptions are."
>
> "I identify students that passively adopt common views and reframe questions based on their responses in a way that enables them to consider the limitations of their choices and alternate viewpoints."
>
> "I encourage students to comment on each other's statements to identify areas of consensus and disagreement, to justify their positions and work towards agreement on issues where possible."

Theme 4: Assessment of Critical Thinking Through Discussion Posts

Most faculty discussed their assessments of students' critical thinking skills via discussion posts. While students' other assignments were graded and reviewed, discussion posts were the main areas where faculty made these assessments about their students' critical thinking skills.

> "Some don't seem to be using any critical skills, they just write something just to write something, and you forget what they said, there is nothing new that they talk about."
>
> "You see students search for similar examples when you are discussing a topic, and they try to relate it to something that's been in the past scholarly literature. In the collaboration, you find that some students are able to look at somebody's piece of work and be able to critique it and come up with valid questions, and the questions that they are asking are actually contributing by clarifying the discussion or enhancing the discussion."
>
> "Some students provide detailed and structured postings supported by evidence and like to post frequently, while others do not."

> "In their style of posts, some are more brief or use a relaxed writing style and go straight to the point, while others can be more deep. I had a student once that was very verbose and used a lot of big words but was not quite making any point."

Theme 5: Faculty Facilitation and Focus on Application Essential to Student Learning
Most faculty stated that the overall design of their online classrooms focused on faculty facilitation and the need for students to apply the information and that both of those were strong factors for promoting the learning of critical thinking skills. They noted that the requirement in their course designs for collaboration promoted student learning and critical thinking. Most faculty participants also stated that their ideal classrooms would be rich in application requirements or material that was interactive, collaborative, and structured.

> "[Students are] reflecting on what they've learned and talking about how they can apply it within their daily lives and things like that."

> "Through blogging or microblogs, [students] understand how thought leaders connect with their audiences and start to apply their knowledge to communicating directly with the public."

> "Usually what I would try to do when I design the discussion questions is that the first part of the question is kind of them summarizing, very briefly, the actual facts. So, 'Could you tell me what you read? Tell me what you perceived to be the most salient facts that you've learned.' Then the second part of the question would be to tell me, 'How does this apply to your work setting?'"

> "Discussion questions are a way that the student shows that they've read the material. That's the basic level. The second thing is that they show that they can apply the material, so those two things. I think that every discussion question needs to do that."

> "The assignments should be skill-based. It shouldn't just be information. They need to be showing a skill. So they indicate they know how to do a lit review, or they have to show statistics, or they can interview, or they can develop an interview guide, or they know something. Those three or four assignments in an eight-week module, they all need to be skill based."

Student General Summary

Most students differed on their thoughts about what critical thinking means. Many think that providing references to back an argument and critical analysis are both indicative, while some think that application and synthesis are elements of critical thinking. Most students know that they and other students are using critical thinking skills when they critically analyze arguments. Many think that they are using critical thinking skills when they use more references to back an argument or when they demonstrate that they can look at different perspectives of a topic or argument. Most students think that the assignments and discussion questions in the overall design of their online courses promote critical thinking. Students range in their descriptions of how their courses promote critical thinking. Some think that faculty play a big role, while others think that different perspectives built into the assignments provide opportunities for critical thinking. Some think that an online course being rich in application promotes critical thinking, while others think that just the opportunity to be able to think before posting a response in an online format promotes critical thinking.

Overall, most students think their primary role is to be a learner and consider their responsibilities in the classroom to be attendance and participation, being prepared with required readings, and engaging in the discussion forums. Many also feel that they are responsible to complete course assignments, learn from other students, and be respectful to others online. During a typical day, most students read and respond to others in the discussion forums and many email faculty as needed and incorporate faculty feedback to improve their grades. Students have a broad range of experiences with technology; several reported using Skype. Many reported that internet speeds often inhibit their use of course technology. Many students find technology in

the classroom easy to use, but some technologies take more time to learn than others. Many students think that video and audio technologies help them learn. Most students are confident that they are learning when the discussion with students and faculty is stimulating and interesting. Many students feel confident in their learning when the discussions are linked to the course assignments, while many others think that faculty engagement in the discussions gives them confidence that they are learning. Faculty feedback in grading is also something that many students feel gives them confidence in their learning.

Faculty General Summary

Faculty members think that students demonstrate critical thinking when they can apply course information to their professional lives or to practical situations. Independent thinking is also a sign to faculty that students are developing critical thinking skills. Many think students demonstrate critical thinking when they integrate different perspectives, critique or ask questions about the topic or information presented, are open to alternative perspectives, or assess their own learning. Most faculty state that they promote critical thinking in their students by asking them questions and by encouraging student collaboration. Some faculty also promote critical thinking by providing additional resources to their students, including information from their own professional or personal experience. Many faculty think it is important to require their students to provide more evidence or references to back their work. Others incorporate the use of real-life scenarios to apply information in a practical way to promote students' critical thinking.

Faculty think that their students differ primarily in their discussion posting styles. Some students post a lot of information or provide a lot of detail, while others do not. They also think students differ in the ways that they interact with other students or communicate with faculty. Cultural differences are also noted by many faculty members as ways their students differ.

Most faculty think that the overall design of their online classrooms focuses on faculty facilitation and the need for students to apply the information, and both of those are strong factors for promoting learning and critical thinking in students. They think that the requirement for collaboration promotes student learning and critical thinking in their course designs. Most faculty think that the ideal classroom should be rich in application requirements or material and that it is interactive, collaborative, and structured.

Most faculty members are trained for online instruction by their universities, and they also learned by teaching online. Some study as online students, take training outside of the university, and feel that ongoing communication with their supervisors helps with their ability to teach online. Faculty members consider their primary role to be that of facilitator. They think it is their responsibility to keep students on task, provide feedback, answer students' questions, and stimulate critical thinking. Many think that their role is to encourage student collaboration and stimulate student discussions. Some think that shifting and extending their students' perspectives is also important to their role as faculty members.

During a typical week in the online classroom, faculty check their messages and address student concerns. They read students' discussions in the discussion forums, post their own responses to students, and grade student submissions. Many post a summary of each week's discussion or a wrap-up announcement about the week's lesson at the end of the week that further demonstrates how critical thinking skills can be used to address issues raised in the course content. Most faculty also post reminders for students about due dates and spend their time providing students with extra resources in the classroom.

Most online faculty members used some sort of audio or video component in their classrooms to enhance their faculty presence or aid in student learning. YouTube is a technology used by many faculty members. Some faculty like to engage with students in synchronous discussions, while others use PowerPoint presentations to give students additional learning material and guidance. Most of the faculty members' use of technology differs depending on preference, but audio and video technology is broadly used. Online faculty

members range in their responses to what they would integrate into the classroom if they could. Some want to incorporate more audio and video tools, while others like the idea of using games or role-play technology to enhance learning and critical thinking. Some want to use live sessions in their future classes.

Faculty members are confident that their students are learning when their students can apply the information in their professional work or in practical situations. As students incorporate feedback and improve over time, faculty also grow confident in their students' learning. Many faculty members are confident that their students are learning by observing their students' collaborations.

Discussion

Many well-defined themes emerged in this qualitative analysis to generate a composite picture of faculty and student experiences and understandings of critical thinking in the online classroom, within a useful context of teaching and learning in the online environment. It is worth pointing out that the literature suggests students and educators differ in their understanding and experiences of critical thinking, and this study supported this notion. While the responses varied in terms of pinpointing how students think about and experience critical thinking in the online classroom, most students agreed that being able to analyze arguments and cite their points defined critical thinking. This definition, of course, does not provide an accurate picture of critical thinking.

Hence, while students reportedly yearn for application of their learning in developing critical thinking skills and believe that critical thinking is best developed through real-world scenarios and research-based activities (Danczak et al., 2017), online students still seem to be caught up in the banking method of education, where the teacher deposits information into the student's knowledge bank (Freire, 2000). Students engaging in online learning tend to see their development of critical thinking in the ability to regurgitate what they read and construct an argument from those readings through citations and supportive points in their assignments. Students believe their courses promote critical thinking, stating things such as, "Every discussion, collaboration, and assignment is used to promote critical thinking," and, "I think it promotes critical thinking quite well." However, one can see how problematic this is since their understanding of critical thinking is flawed. Are students really learning how to think critically if they do not even know what that means?

Faculty members who teach in the online environment seem to have a good understanding of critical thinking when compared to other educators represented in past research; they align with educational practitioners, believing that critical thinking is developed by applying knowledge in a practical setting (Danczak et al., 2017). Online faculty seem to understand clearly that critical thinking is, in essence, about applying knowledge in the real world. They identify critical thinking as the ability to apply knowledge in practical situations, which includes skills such as thinking for oneself, integrating different perspectives, criticizing, questioning, and being open to different perspectives. Faculty also demonstrate this understanding through the way they facilitate student learning:

> "We have collaboration questions now that are almost like a case study, so throughout the module, [students] are talking about [the fact that] there's a new Minister in this country. So all the collaborations in that unit are referring back to your case study, which is something that is more tangible, and students can think through the situation, and they can apply what they've seen, and where they can apply their experiences."
>
> "You find that if something is closer to home, it's not some a superficial, theoretic discussion; it's much more meaningful in a way. It's real case studies. It looks at current affairs, although how current it will remain, is one thing. It's as good as the modules are updated, but at the same time, it has brought in these practical challenges of information."

Given the fact that online faculty members seem to understand what it means to think critically and many apply real-world applications in their online classrooms, why, then, are students not understanding? There is clearly a disconnect. The answer could be found in the possibility of inconsistent facilitation. Not all faculty may be able to teach critical thinking well, despite their understanding of its meaning. Consider this quotation from one faculty participant about promoting critical thinking in the online classroom: "It's about the way you facilitate it, how you try to allow and create space. I don't want to sound a bit arrogant, but sometimes I look in other classrooms, and I see how colleagues do discussions I think, 'Okay, this is not critical. This is just asking questions around understanding—elaborate this a little further. How boring is this? This is not allowing any student to go deeper in a discussion or to critically reflect'."

Students desire clear definitions of critical thinking and want educators to be more transparent in their teaching methods (Kressler & Kressler, 2020). It is clear that defining critical thinking and facilitating the acquisition of critical thinking skills is still a struggle in the online learning environment. According to the information gained in this study, students and faculty engaged in the online classroom agree in some ways that critical thinking skills are gained through practical applications. But this is where agreement ceases, as facilitation apparently breaks down through various teaching methods and applications of faculty members. Students go on believing they are developing critical thinking skills in their online environments, when in fact they are regurgitating information in assignments, while faculty continue to provide ineffective practical applications in their teaching, which is lost on students.

Limitations of the Study

There are several limitations that are important to note. One is the varied ways data was collected. All faculty interviews were conducted one on one with researchers, while student interviews consisted of one-on-one interviews and completed questionnaires that were submitted in writing. This may have had an impact on the number of themes that presented for each prompt. Faculty tended to present more information, whereas students presented less. This variance in responses may be due to different experiences with critical thinking, placing faculty at a higher experience level than many of the students. Student participants may not implement critical thinking skills as much as faculty participants who regularly participate in critical thinking activities. Faculty were also asked more questions, as their experiences spanned more topics that were important to cover in terms of context. Faculty experiences with teaching in the online environment were varied, and it can be assumed that they would be more generalizable of a participant pool. Obtaining data from students proved more difficult, and the data collected was more reflective of a convenience sample, since all students who participated fell within the range of 1.5 to 2.5 years of experience in online learning, which may have limited generalizability.

Implications for Practice and Considerations for Future Research

Educators often note that their students gain critical thinking skills in working environments (Biggs, 2012). Engaging in activities has been shown to develop critical thinking more effectively when it is accompanied by mentoring, dialogue, and authentic instruction. Hence, a strong recommendation for online educators who want to help students develop their critical thinking skills is to utilize mentoring, dialogue, and authentic instruction alongside online activities (Abrami et al., 2015).

This analysis was restricted to a specific course in the master of public health program, which is also a graduate program. Similar analysis with other types of graduate and undergraduate programs would be helpful. To further help educators understand and facilitate the development of critical thinking skills in the online environment, research that employs focus groups with students and teachers would be of particular importance. Through such a study, online educators and students could bridge the gap of misunderstanding and may be able to find a solution to better online facilitation. In addition, the use of rubrics to evaluate student work, along with faculty feedback related to critical thinking, would complement the findings of the

current study and could allow for a deeper understanding of the ways faculty and students view critical thinking. A larger participant pool, particularly of students, could also enhance the focus of this topic. Another area of potential research interest lies in examining differences in critical thinking skills development between face-to-face and online settings. Finally, providing similar questions to faculty and students at other online universities would contribute to more robust findings.

Conclusion

As we consider the results of this study, it is important to note that many factors can contribute to the differences between educators and students, such as the maturity levels, different experiences, separate cultures, and distinct individual circumstances of all participants. More specifically, faculty members in this study seemed to have a richer understanding of critical thinking, which could be a result of being engaged in the academic environment and receiving specific training that students did not or could not access. The results of this study suggest that a shared understanding of critical thinking is incomplete. However, in their responses, both students and faculty stated that they believed critical thinking skills were being attained in the online classroom. Students depicted their classrooms as settings that applied their knowledge and developed their critical thinking skills, while faculty members noted how well their application-based interactions and activities worked to increase critical thought in their students. If the online learning environment is to be effective in helping students develop critical thinking skills, first and foremost, students and faculty need a shared understanding of what actually constitutes critical thinking. Only then can educators take meaningful steps toward helping students develop critical thinking skills.

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Appendix

Interview Protocols

Faculty

***Demographic Questions*:**

5. How long have you been teaching online?
6. How long have you been teaching online for the University of Liverpool?
7. What training have you had to prepare you to teach online?
8. On a scale from 1 to 10, with 1 = least knowledge and 10 = most knowledge, how knowledgeable are you about technology tools to facilitate engagement in the classroom (such as blogs, podcasts, videos, etc.)?
9. On a scale from 1 to 10, with 1 = never use and 10 = use every time I teach, how often do you use some kind of technology tools to interact with students in the classroom (such as blogs, podcasts, videos, etc.)?
10. Do you have a particular framework that guides your philosophy of teaching online? If yes, what is it?

Interview Questions:

11. Please describe your perceptions of the online classroom.
12. What do you consider to be your role in the classroom as an instructor?
13. Please describe your experiences using technology in the online classroom.
14. Please describe the things that happen in the classroom that give you confidence students are learning.
15. Describe the strategies you use as a teacher to help students to learn.
16. Describe the ways students are different from each other in the classroom.
17. Please describe the ways you know that students are connecting with each other in the classroom.
18. Please describe the things you do as a teacher to promote higher-order thinking in the classroom.
19. Tell me how you know that students are using and/or developing higher-order, critical thinking skills.
20. Describe your experiences with the online classroom in terms of how its overall design promotes or does not promote critical thinking in students.
21. How do you define “engagement” in the online classroom?
22. How do you establish teaching presence in the classroom?
23. Cognitive presence is defined as the “extent to which the participants in any configuration of a community of inquiry are able to construct meaning through sustained communication.” How do you establish cognitive presence in the classroom?
24. Social presence is defined as “the ability of learners to project their personal characteristics into the community of inquiry, thereby presenting themselves as ‘real people.’” How do you promote social presence in your classroom?
25. Teaching presence is defined as “the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes.” How do you establish teaching presence in the classroom?
26. Some suggest that emotional presence is an important factor in classroom engagement, and the ways faculty and students make an emotional connection with each other are important. How do you establish emotional presence in the classroom?

Students

Demographic Questions:

1. How long have you been taking classes online and how many have you taken?
2. How long have you been taking classes online at the University of Liverpool?
3. On a scale from 1 to 10, with 1 = least knowledge and 10 = most knowledge, how knowledgeable are you regarding online social networking and communication tools?
4. On a scale from 1 to 10, with 1 = never use and 10 = use multiple times a day, how often do you use online social networking and communication tools?

Interview Questions

5. What do you consider to be your role and responsibilities in the classroom as a student?
6. Please describe your experience during a typical day or week in the online classroom.
7. Please describe your experiences using technology in the online classroom.
8. Please describe the things that happen in the classroom that give you confidence that you are learning the information.
9. Please describe the ways you know are connecting with other students and the faculty in the classroom.
10. When teachers talk about "critical thinking" or "higher order thinking," what does this mean to you?
11. Tell me how you know that you and other students are using higher-order thinking skills.
12. Describe your experiences with the online classroom in terms of how its overall design promotes or does not promote higher-order thinking.
13. In what ways are your online classes particularly engaging?
14. In what ways are your online classes not particularly engaging?
15. What technologies would you like to see integrated into your online classroom learning environments?
16. What would the ideal online classroom look like in your opinion?

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