Thrice-Told Tales of Learning about Interaction, Collaboration, and Engagement

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The paper discusses three concepts supporting online learning: interaction, collaboration, and engagement. It aims to inform about the similarities and differences of these concepts through definition, description, and discussion of their characteristics in selected instructional activities. Further, the authors identify and discuss how these ideas intersect to provide a meaningful online learning experience. Also, the authors share sample activities demonstrating each concept in action. Finally, the paper proposes to address the challenges and issues of using, embedding, or integrating these concepts in the online activities' design, development, and delivery.

Keywords: Collaboration, Engagement, Interaction, Online Learning, Teaching

Introduction

Teaching and learning online has become a significant educational experience in the last decade and during the pandemic. The experience is not new to those involved in secondary and higher education contexts. Still, it gained attention among younger learners attending schooling face-to-face now limited or prevented by lockdown decisions due to health and safety reasons.

Several issues forced learners to attend school online, including inadequate teacher preparation (Franks, 2021; VanLone, Panse-Barone, & Long, 2022), restricted skills training, lack of student readiness, limited technology access, and increasing mental health concerns (Freisthler et al., 2021; Garcia & Weiss, 2020).

Educating students online meant changes in expectations on how this population engages with educators, peers, content-based resources, and instructional tools (Quezada, Talbot & Quezada-Parker, 2020). Reports state that many educational experiences ended as one-way delivery, zoom meeting fatigue, boredom and isolation, and feelings of loss and inadequacy (Jalongo, 2021). More studies point to the criticality of engagement in online learning experiences, given the return to pre-pandemic teaching practices (Moore, Trust, Lockee, Bond, & Hodges, 2021).

Defining the Concepts

The paper defines and discusses three interrelated concepts of interaction, collaboration, and engagement as facilitators of successful teaching and learning activities in online environments. The authors argue that interaction and collaboration as observable behaviors contribute to engaged teaching and learning between and among stakeholders.

Interaction

There are multiple definitions or interpretations of interaction as a concept. For this paper, the authors operationally define interaction as an action occurring when two or more objects (or individuals) affect one another. The authors see that it is essential to have a two-way effect in interaction as opposed to a one-way or causal effect. In teaching and learning contexts, one can observe the interaction between an individual and an object or between individuals.

Moore (1989) describes three types of interaction observed in an online environment: learner-content, learner-instructor, and learner-learner. First, Moore argued that without learner-content interaction, there is no education

"since it is the process of intellectually interacting with content that results in changes in the learner's understanding, perspective, or the cognitive structures of the learner's mind" (p.2). Also, he discussed that interactions with print media as a source of content have recently moved to electronic or technology-based forms.

Moore also identified learner-instructor interaction involving the learner and the individual delivering the content material to develop knowledge and skills. He stated, "the frequency and intensity of the teacher's influence on learners when there is learner-teacher interaction is much greater than when there is only learner-content interaction" (p.3). Finally, Moore described the interaction "between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor" (p.4). He stated this type of interaction could be valuable for facilitating learning within a group of individuals.

Collaboration

CORE Education (2022) identifies the concept of collaboration as "working with specific intent, an agreement to a common purpose or goal, and to a common way of achieving that" (para 2). Collaborating means working with another person to create a product or produce an output. Activities involving brainstorming, group discussions, consensus building, and problem-solving demonstrate collaboration. Common collaboration skills include efficient communication, purpose-driven, data management, openness, problem management, technology literacy, and humility (Anjos, n.d.).

Engagement

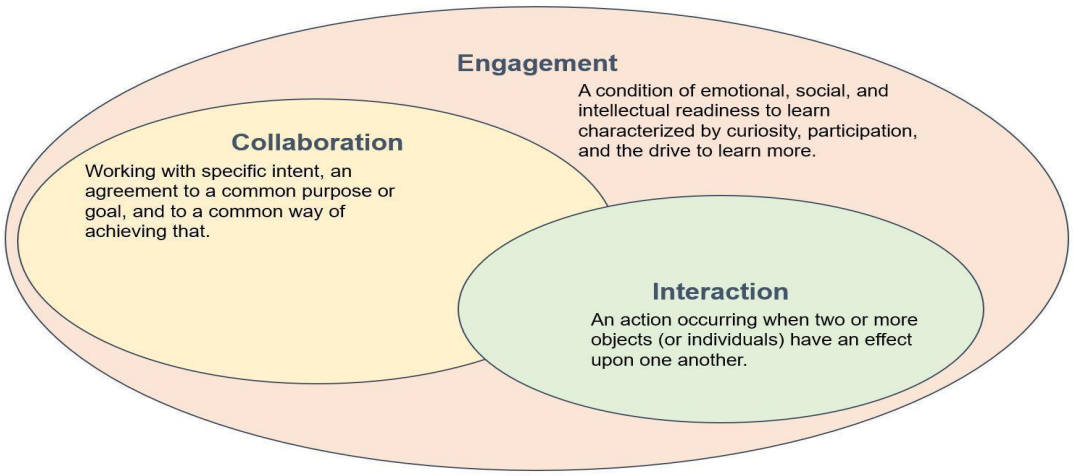
Abla and Fraument (2019) stated that teachers are not only demanding and intentional in their expectations of their students but also act as providers of nurturing learning environments. Support meant that teachers engage students through interactive activities, exciting content, encouraging feedback, and safe space. The research literature provides multiple definitions of student engagement. A common explanation is the "recognition that school is not merely a place where knowledge is transferred from one generation to the next but is also a place for emotional connections, which can be either negative or positive" (p.1). Further, the types of engagement identified include behavioral, emotional, and cognitive. Abla and Fraument define student engagement as "a condition of emotional, social, and intellectual readiness to learn characterized by curiosity, participation, and the drive to learn more" (p. 2).

Intersection

How are the three concepts related to teaching and learning activities in online environments? After review and deliberations, the authors agreed that a potential relationship exists between interaction, collaboration, and engagement (see Figure 1). The authors argue that exchanges (as interactions) happen while working together based on the definitions and descriptions from the literature. Since interaction involves two or more individuals in a teaching or learning context, then a similar scenario occurs during collaboration. However, those engaged in the exchange may not have a specific intent or agreement towards an outcome. The interaction could result from an unplanned or casual encounter leading to more talks or discussions.

Figure 1

The figure demonstrates the intersection between interaction, collaboration, and engagement concepts.



Demonstration in Practice

In discussing the concept of interaction, collaboration, and engagement as critical elements in teaching and learning in online environments, the authors reviewed their courses, specifically online activities. They identified and described instructional activities that demonstrated at least one of the concepts. The authors presented and discussed the selected instructional activities as cases in this paper.

Case A: Integrating the Delphi Method in Writing a Paper

Focus: Case A focuses on students learning about the issues in the field of instructional technology. The assignment allows the students to explore and acquire knowledge about the area focusing on the problems. In the end, the students write an issue paper.

Context: The instructional activity came from a graduate-level course in an educational specialist program in instructional technology. Students enroll in this course at the beginning of their degree program --- the first semester in the sequence of four classes as part of the core. They are primarily K-12 teachers working full-time and attending a regional comprehensive public university in the Southeastern United States.

Process: For this course, the writing assignment of an issue paper starts with a discussion on what is available and accessible resources containing literature on issues in instructional technology. After reviewing these resources, students identified and posted on five issues as a component of the online discussion activity.

After the discussion, all the issues identified and posted were collated into a list. The instructor asked the students to rank the top twenty issues. Based on the literature reviewed, the students rated the identified instructional technology problems using their perceptions and experiences. The instructor subjected the students' output to a process called the Delphi method--- ranking items as a process towards consensus building (Keeney, Hasson, & McKenna, 2001; Okoli & Pawlowski, 2004). Collating the top twenty issues provided by the students, the instructor initiated a second Delphi survey to identify the top ten. A third and final Delphi survey identified the top-ranked base resulting from the consensus-building exercise. Once the list generates the highly-ranked issues, students choose the top three as the topic of interest. Based on the student's preferences, each one gets assigned a problem to write about.

A draft paper was submitted and assigned for peer review. Each student reviews three draft papers using an instructor-made checklist. Also, they provided qualitative feedback. Students used the feedback to revise their papers for submission.

Case B: Co-Creating New Knowledge through Social Annotations

Focus: Case B is an instructional activity focusing on getting graduate students to read and review digital content and work with peers to co-create new knowledge. The instructor based the activity's design on adult learning principles where students bring their current knowledge and experience in developing new content (Brown & Croft, 2020). The instructor set up the class as a community of inquiry.

Context: The course enrolls graduate students from an instructional technology program and is part of a sequence of courses toward completing an online teaching endorsement. The course is delivered online from a comprehensive regional university in the southeastern United States. Students are primarily in-service teachers from K-12 settings and are employed full-time.

Process: For this activity, students received prompts from the instructor to think about and answer while reading an assigned digital content -- mainly book chapters. In preparing the students for the activity, the instructor includes a low-stakes icebreaker assignment during the first week of the term. Students create an account and practice using *Perusall*, an online social reading platform. The platform also allows the class to purchase textbooks and use them throughout the semester.

The instructor used two approaches to engaging the students. Sometimes, the instructor highlights specific sentences or paragraphs and posts questions. Other times, the instructor presents broad questions for students to select strategies in response and discuss how they would employ them in their online teaching practices. The student's responses to the instructor's questions became annotations to the assigned readings (Kalir, 2020). Once students post their responses to *Perusall*, they must respond to at least two of their classmates' annotations using the reply feature.

Case 3: Designing and Developing Multimedia Solutions

Focus: Case C as an instructional activity focuses on a small group of graduate students (2-4) working together to complete a multimedia project. Students use various communication tools and team up in small groups, such as emails, phone calls, and video conferencing (e.g., Collaborate Ultra). Specifically, the associated activities include hands-on tasks and a client project.

Context: The activity is part of a graduate-level online course teaching instructional multimedia design and development. In this course, students explore the topics of 3D modeling and printing (Elrod, 2016; Novak & Wisdom, 2018), makerspace (Hanover, 2021), graphics, and digital storytelling (Smeda, Dakich, & Sharda, 2014). The students are primarily in-service K-12 teachers, administrators, or school librarians who bring different expertise, experiences, and backgrounds. To encourage students to learn with peers, they work on projects in small-group and as a whole class.

Process: Given a media topic, students complete a hands-on project. For example, they created a 3D model to use as a learning tool in their classrooms. They also design learning activities to integrate the 3D model or similar 3D modeling processes. After completing the hands-on project, students identify a client with multimedia design and development needs. The clients could be K-12 teachers, school administrators, or school librarians. Students must identify a performance problem in the client's workplace and propose and develop a multimedia solution to address it.

Students use the discussion board as a space to express and share their ideas and thoughts in an asynchronous online format. In discussion activities, the instructor provides guiding questions for students to discuss their experience using multimedia solutions in teaching K-12 subjects as a large group. Individual students review a group submission and provide critical and constructive feedback. Also, they collectively reflect on the class experience.

Framing the Practice

The authors discussed the course activities shared in this paper and reflected on how they used the concepts of interaction, collaboration, and engagement. Using Table 1, the authors mapped out how interactive and collaborative actions contributed to student engagement.

Table 1

Observed behaviors during online activities based on definitions and descriptions of the concepts: Interaction, collaboration, and engagement

Concept	Case A	Case B	Case C
Interaction	Student-content interaction happened during the completion of the Delphi survey. Student-student interaction occurs when receiving feedback to draft submission of the paper.	Student-content interaction occurs through the reading of the assigned material. Student-student interaction occurred through annotations of the reading and replies to others' annotations.	Student-content interaction occurred when students worked on the projects (e.g., creating a 3D model, reading course materials, discussing readings). Student-student interactions occurred in online discussions and peer critique activities.
Collaboration	No collaboration occurred between students.	Collaboration occurred as students made meaning of the text together through annotations and discussion via replies.	Collaboration happened when students worked together as a group to design and develop a multimedia product (e.g., mini projects, client projects)
Engagement	Student engagement with the course content and process resulted from interactions at multiple levels: Delphi survey completion and peer review of draft submissions. The activities allowed students to revise and finalize their issue papers.	Students self-report higher engagement and interaction when using social annotations over traditional discussion boards.	Based upon the ideas generated from interacting with course materials and classmates, students, working with peers, engaged in the process of collectively designing and making multimedia products.

Reflective Practice

The authors shared the challenges and lessons learned from implementing the selected course activities concerning the concepts of interaction, collaboration, and engagement.

Challenges

The author of Case A discussed the challenge of time. The Delphi method required multiple survey completion to narrow the list of instructional technology issues for students to choose from. The students did not have the luxury of four weeks to do three or four rounds of surveys to whittle down the list to ten.

The implementation of the peer review activity also became a time-related issue (Hsu & Sandford, 2007). Each submitted draft received feedback from other students. A student reviewed at least two, if not three. The author provided a checklist based on the assignment to facilitate a speedy peer review process. The peer reviewer marked each checklist item if the submission met the expectation of the instruction or not. The peer review process asked the students to provide comments given their marks.

The Case B author notes using a social annotation platform like *Perusall* or *Hypothesis* shares the same challenges as traditional learning activities. One must carefully select the readings and spend time developing prompts or questions for the students to respond to.

Additionally, implementing social annotations in your course will require using a different platform than your LMS, which presents challenges. Students will have to learn a new medium, and you will have to spend a little time orienting students to the social annotation platform. The instructor must create a new Perusall class each semester and copy the readings over, and remember to update the due dates in this.

The Case C author noticed that a common challenge students faced in makerspace projects was collaborating and communicating effectively and efficiently in an online environment. Miscommunication happened as students brought in different personal backgrounds and were from various disciplines. When the team members were full-time teachers, coordinating schedules became challenging due to teachers' workload, and teachers from other schools may have different school schedules. Furthermore, the author found monitoring, facilitating, and evaluating student involvement in the collective design/making processes in an online environment challenging.

Lessons

For Case A, the author learned that the number of students makes the difference in using the Delphi method. In the first semester that the author used the Delphi method, more than twenty students were involved. If each student provides five issues, then the list of topics is substantive. However, the following term only enrolled less than ten students. The numbers generated challenges in creating a list of issues and later assigning students as peer reviewers.

Case B author learned that her students strongly preferred social annotation activities to discussion boards, leading the instructor to replace more discussion boards with social annotation activities. Students reported higher engagement, more interaction with the readings, and greater understanding through the practice of social annotation. The quality of annotations and responses was also much higher than on traditional discussion boards and more pleasant to grade.

Case C author learned that to trigger effective collaboration and interaction, the self-introduction discussion in the first week is essential. Through this activity, students could get familiar with each other, or they can revisit the discussion postings later in the course to find a potential teammate. Some guiding questions could help students structure their self-introduction. By doing so, students will cover the information that could help connect them to potential teammates.

In addition, the Case C author found that interaction (e.g., online discussion, peer critique) and collaboration (e.g., group projects) activities involved rich opportunities to engage students in reflection and learning. Reviewing students' final examination of the course experience, the author noticed that students appreciated that sharing project ideas and interacting with classmates encouraged them to learn reflectively. After learning about others' projects, students were more likely to revisit and think about improving their work. Moreover, peer support from group projects, peer critique, or online discussion could be an effective strategy to help students navigate new technologies in the making and design processes. Students usually struggle with exploring a technology tool alone in an online learning environment. Working in a group allowed them to understand the course materials better. Some students who took the course with their colleagues considered the group project an excellent opportunity to learn from others

or about colleagues outside their workplace.

Conclusion

The paper considered the three concepts of interaction, collaboration, and engagement essential in online teaching and learning. The authors identified and reviewed online activities for characteristics aligning with the concepts' definitions and descriptions. The initial review provided information on how the students demonstrated interactive and collaborative behaviors in completing the online activities. The authors argue that online behaviors identified as interactions or collaborations promote engagement.

Further, the authors discussed the challenges observed as students interact or collaborate in completing the online activities and shared potential reasons. For example, adult students who usually work full-time face many challenges collaborating in an online learning environment. Given this scenario, the authors suggest that more facilitation is needed to guide and support students' interaction and collaboration so they can actively work with each other and engage in meaningful collaborative learning. In this process, peer learning opportunities (e.g., peer critique, discussion, and sharing of project ideas) could promote reflective making and design processes.

The authors also shared lessons learned from the review. They thought that providing students access to various collaboration tools and applications (e.g., web conferencing, GoogleDocs, project management program) is essential to support communication and teamwork skills in online environments. While at the same time, the authors thought it would be beneficial to provide clear instructions on the collaboration and interaction aspects of the typical design and making processes (e.g., identifying problems, design and making, interpreting and communicating, collecting feedback, testing, revising).

The return to the pre-pandemic instructional scenario seems unrealistic, or one may have to wait a long time. The authors recommend finding new ways that allow for engaged learning. Based on the information gained from this exploration, they believe in the need to continue studying how the three concepts relate to each other as the design and development of learning experiences remain toward online delivery.

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