# Meeting Students in the Margins: Exploring the Use of Social Annotation by Undergraduate Online Instructors

A Dissertation

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## DEDICATION

This dissertation is dedicated to every teacher who took the extra step to use a new method, tool, or technology to improve learning processes and outcomes. I hope you keep inspiring many more of us to innovate and boldly ask for what you need to take more steps. And to every young reader who fills books with highlights and annotations, paper or digital- I hope you keep inspiring more of us to design better and to help nurture that love for reading, writing, and collaboration.

## ABSTRACT

Social Annotation (SA) is a learning technology that allows people to read, highlight, and comment on specific parts of text. SA tools like Hypothes.is enable users to highlight and annotate texts and documents online and respond to others' annotations via text, sharing links of documents, audio, or video. Research on SA in higher education online learning has increased exponentially in the past two decades. However, this rich body of literature mainly studied the evaluation of SA tools and their effectiveness on student-related measures. However, very few studies discuss instructors' perspectives and their use of social annotation. There needs to be more knowledge about the processes and challenges instructors face in using and implementing social annotation in undergraduate online courses. The lack of studies on instructor perspectives on social annotation makes it challenging to understand the teaching, assessment, and participation strategies that effectively achieve the course objectives, improve student learning outcomes, and engage students in learning. This study aims to understand how and why instructors use social annotation to achieve their pedagogical goals, the processes behind the thoughtful and intentional design of social annotation activities for their online classes, and their perception of how it impacts student learning experiences.

This qualitative, descriptive case study delves into instructors' design and pedagogical processes using social annotation tools for their online undergraduate courses. The findings of this study illustrate rich descriptions of instructor design and implementation processes of five instructors teaching online courses in two modalities, asynchronous and synchronous. It details how the course objectives, context, design, and pedagogical processes influence learner participation in various social annotation activities. Thematic analysis of qualitative data sources also elaborates that instructors use social annotation tools to create an authentic, collaborative

learning community for student discussion and to ensure student perspectives are more visible. Instructors' design and pedagogical processes, like providing guiding prompts, participation-based assessment strategies, and instructor participation to further student discussion, are also evident. The study's implications indicate how there should be more focus on instructor use of learning technologies, support them institutionally with professional development, and communities of practice.

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# CHAPTER 1: INTRODUCTION

I keep telling everyone that most of my education happened in teacher-centered, lecture-based environments. I was curious about a classmate's idea and wanted to learn more about it, but my teacher thought that discussing more would be "plagiarizing" and that I should think of my own ideas. I wanted to talk to my peers, learn more about their ideas, and discuss and develop them further with my perspectives. As that curiosity developed, more questions arose, and so did the need to talk and share in class. I wanted to know what happens when students share and discuss work together. I wanted to know more about how to make that happen. I wanted to know more about teaching, learning, and technology. However, when I started working with Indian K-12 public schools after earning my master's degree, teaching, and learning strategies remained the same. Listen. Remember. Repeat. Pedagogy was still teacher centered. Technology was mainly to support lectures. Students with a minimal voice to ask and answer, teachers with minimal choice of pedagogies and resources.

These experiences motivated me to pursue my Ph.D. in Learning Technologies. "I want to support teachers in integrating technology more meaningfully," I decided. So, when I joined the program, I was delighted to see the university's welcoming, collaborative, student-centered classes. I was excited to participate in discussions with my peers and instructors in both face-to-face and online classes. As an online learner, I was amazed at the different online platforms and tools used in the classes for collaborative discussions. In one of the classes, I learned about an online social annotation tool called Hypothes.is. Social Annotation (SA) was new to me as an online learner and a novice graduate instructor teaching undergraduate online courses. My interest in working with social annotation increased when I realized collaborative discussions in online classrooms can be structured through social reading. As a learner, social annotation was

extremely helpful when included in the course design. I could annotate the aspects of course readings that I found significant, relevant, and engaging. Interacting with peers in the class while reading through texts helped me learn from their perspectives on excerpts, I found relevant to my interests and how similar/different they are from others. Soon, I wanted to embed social annotation tools into the asynchronous online courses I taught as a graduate instructor. I started looking for studies on annotation and social annotation in online learning environments to understand them better.

What is an annotation? Annotation is a practice related to reading, thinking, and scholarly writing and discourse that predates the digital era by centuries (Adler, 1940; Kalir, 2020; Marshall & Brush, 2004; Skains, 2019). Digital annotation tools in the past two decades have been helping with practices like reading comprehension, collaboration, peer review, and assessment (Gao, 2013; Schacht, 2015). Research in collaborative annotation technologies developed what is currently called Social Annotation (SA). Kalir (2020) defines social annotation as "a genre of learning technology that enables the annotation of digital resources for information sharing, social interaction, and knowledge production" (p. 2). Some examples of social annotation tools include Hypothes.is, Diigo and Perusall, which allow users to highlight and annotate texts and documents online and respond to the annotations others have made. They have been studied to support sustained discussion, allowing learners to create shared annotations to a text, construct, revise, and tune their comprehension of a topic (e.g., Blyth, 2014; Chan & Pow, 2020; Zarzour & Sellami, 2017). Social annotations have also been studied to improve learner reading and language, knowledge construction and sharing, student collaborative discussion, fostering a link between multiple learners and instructors' perspectives, and for

feedback and assessments (e.g., Chen & Chen, 2023; Erylmaz et al., 2013; Jan et al., 2016; Lin &Lai, 2014; Sun & Gao, 2017).

Social annotation literature mainly discusses student experiences with SA activities and how they impact learning outcomes (e.g., Zarzour & Sellami, 2017). Studies also highlight social reading and discussion as an alternative for online discussion alongside or replacing threaded discussion forums (Chan & Pow, 2020; Gao, 2013; Sun & Gao, 2017). Unlike threaded discussions, these scholars argue that SA activities encourage social reading and meaningful and sustained discussion among learners-content-instructors during the knowledge construction stage. While these are essential areas of study to understand the uses and benefits of social annotation, there should be more instructor perspectives on how and why they design and deliver online classes with SA. In a systematic review conducted on social annotation tools in higher education (Ghadirian et al., 2018), the authors discussed that most studies focused on the evaluation/survey of social annotation tools and their effectiveness on student-oriented measures. The review mentions that few studies look into instructor participation and intentional design and how they improved student learning outcomes. They discuss the need for further research on instructor roles and support.

But why is knowing the perspectives and experiences of instructors essential? Various studies (e.g., Adams & Wilson, 2020; Sun & Gao, 2017), systematic reviews (Ghadirian et al., 2018), and literature reviews (Krouska et al., 2018; Zhu et al., 2020) discuss the affordances of social annotation tools in higher education and how they support social reading, student interaction, shared experiences, and collaborative knowledge construction. The studies highlight that social annotation activities are effective when designed with intentional, student-centered, and socio-constructivist pedagogies and that these platforms provide ample opportunities. Novak

et al. (2012), in one of the first literature reviews on social annotation, highlight the importance of instructor support in designing SA activities to maximize student learning. Zhu et al. (2020) also discuss that designing annotation strategies with specific pedagogical goals, intentional participation of instructors in annotation activities, purposeful scaffolding through prompt questions, and constant guidance are essential. The research on social annotation in online learning presents that student experiences with the tools and activities designed for them are positive (e.g., Zarzour & Sellami, 2018). Understanding instructors' processes behind this is vital to designing, facilitating, and scaffolding online classes with social annotation to maximize student learning experiences in different contexts.

**Research Problem**

Research studies on social annotation in online collaborative learning broadly fall into two areas: (a) functions and features of various social annotation tools and (b) student experiences and learning outcomes after using a social annotation tool. Many studies focus on the impact of various social annotation tools on students' social reading of course texts, peer feedback, discussion, knowledge construction, and learning outcomes (Chen & Chen, 2023; Eryilmaz et al., 2013; Thoms & Poole, 2017). Very few studies delve into instructor experiences with social annotation tools and their pedagogical choices in designing online instruction activities. One study by Schneider et al. (2016) discusses the increasing number of social annotation tools available in the past decade but notes the limited investigations from an instructor's perspective and regularly teaching online with annotation activities. In this study, instructors who integrated classroom reading and discussion activities using the Lacuna tool discussed their pedagogies and experiences. They mentioned how the tool helped them get to know their students better, incorporate their perspectives into their pedagogies, and help create

authentic classroom dialogue. Teachers also reflected on negotiating with student-led discussions and discovery while providing essential scaffolding and guidance to steer their learning on a specific path. Schneider et al. (2016) discuss the need for insights into the self-reflection of instructors. The time instructors spend participating or reviewing student annotations for discussions, assessment, and feedback illustrates the intentionality, reflection, and iterative processes in instructors' design and use of the platforms.

Therefore, this study's problem is that there needs to be more knowledge about the processes and challenges instructors face in using and implementing social annotation in undergraduate online courses. The lack of studies on instructor perspectives on social annotation makes it challenging to understand the teaching, assessment, and participation strategies that effectively achieve the course objectives, improve student learning outcomes, and engage students in learning. I am interested in understanding how and why instructors use social annotation to achieve their pedagogical goals. I want to understand the processes behind the thoughtful and intentional design of social annotation activities for their online classes and their perception of how it impacts student learning experiences. I hope this study brings awareness to more instructors in being intentional about their pedagogical practices and having the information to choose social annotation to improve online learning experiences for themselves and their students. I also hope this study supports instructional designers interested in embedding social annotation in course designs that support social and collaborative reading and knowledge construction.

**Potential Significance and Value of the Study**

The implications and benefits of this study directly impact online learning in a post-pandemic world and beyond. Online education has been reported to have continued growing

before and since COVID-19, with newer technologies opening up for online teaching and learning (Brown et al., 2020; Seaman et al., 2018). Researchers discuss how online learning may continue or take different, adaptable shapes to accommodate multiple learners and their needs (Rapanta et al., 2020). This highlights the need for tools and activities that support contextual, interactive, and engaging online discussions among learners; "for every course that encourages students to engage with their peers to clarify terminology, interpret concepts, or construct new knowledge, the social annotation will serve as a low-barrier entry point for higher-level thinking and collaboration" (Zucker et al., 2021, p.8).

This study also contributes to the existing theories and perspectives on using social annotation in online undergraduate education. Instructor perspectives and experiences working with online social annotation help create more awareness for new and experienced teachers to inform and refine their pedagogical practices. Understanding their design and facilitation choices, processes, and challenges in social annotation may help other instructors transition to other technologies and platforms. Studying the processes of working with these tools brings out equitable and paced collaborative activities for online learners that build a sense of community. Delving into instructors' processes from design to implementation can help us understand how pedagogical beliefs turn into practices. Multiple changes and iterations in designing social annotation activities on a spectrum from simple social reading to deep integration in a social discussion can help improve online teaching techniques.

**Research Questions**

Social annotation literature in higher education shows a gap in understanding how and why instructors use it in online classes. Many studies discuss student experiences with annotation tools, improved processes, and performance outcomes (e.g., Zarzour & Sellami, 2017).

Researchers also compare social annotation to threaded discussion forums to highlight the value of sustained and contextual discussions focusing on learner interaction during knowledge construction (e.g., Sun & Gao, 2017). However, a gap exists in addressing why instructors use social annotation tools and how they design online learning experiences around them. While research indicates that student experiences are positive with social annotation and that the impact on these activities is evident through content analysis, the processes and pedagogy behind the design are rarely discussed. Understanding instructor perspectives provides awareness of teaching online with social annotation and informs their pedagogies for research and practice.

Transitioning from a threaded discussion forum or a learning management system (LMS) to choosing a new tool, online platform, or social annotation can be difficult for new and experienced instructors. Providing a solid and in-depth awareness of learner-content-instructor interaction, design, and facilitation in online learning environments is crucial. It is helpful to gather perspectives and experiences from instructors who transitioned from discussion forums to social annotation, used them alongside other platforms, or used SA as their primary discussion platform. My research questions, therefore, focus on understanding instructor perspectives, processes, and problems in using social annotation activities and how it has helped them with their pedagogical goals. This study uses a qualitative case-study approach to address these research questions:

1. Why are instructors using SA in their UG online courses?
2. How do instructors design and implement activities with SA?
3. What are instructors' participatory pedagogies in implementing SA in their UG online courses?

**Overview of Chapters**

The next chapter, Chapter 2, reviews the literature on the theoretical frameworks that guide the study, social constructivism, and sociocultural theory, and how they translate to and inform design and pedagogy in online learning environments. This chapter also reviews the literature on social annotation in online learning, student perspectives on using social annotation tools for collaborative learning, knowledge construction, language, literacy, and feedback. Chapter 2 concludes with a brief discussion of research studies examining instructor perspectives on social annotation.

Chapter 3 discusses the methodology of this study and the rationale for a qualitative, descriptive case study. This chapter also details my data collection and analysis processes and the validity strategies I used to view and organize my study. The chapter also includes my role and perspective as a qualitative researcher.

Chapter 4 describes the course designs of all five focal instructors of this study. Two instructors (River and Cedar) teach entirely online, asynchronous courses, and the first part of the chapter elaborates on their course design and pedagogical processes with social annotation. One instructor teaches one section of synchronous and asynchronous courses (Aspen), and two instructors (Aurora and Clay) teach online synchronous courses.

Chapter 5 shares the thematic analysis across all five focal instructors' interviews and answers all three research questions. This chapter shares the ideas visible across all five instructors' interviews and how they inform the research questions.

Chapter 6 summarizes the study, discusses the findings and how they relate to existing research, and shares implications based on the findings for future research. This chapter also shares the limitations of this study and provides some practice recommendations.

## CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

This chapter briefly introduces how learning happens, followed by an overview of this study's theoretical frameworks, which view learning as a social process. This section is followed by an overview of the role of instructors in constructivist pedagogies, a brief review of learning design and pedagogies used in online environments, and the importance of student participation and discussion in online learning. The next section reviews social annotation and its tools, followed by a detailed review of literature on social annotation from the learners' perspective and for different learning processes and outcomes such as collaborative learning, knowledge construction, language and literacy, and assessment. Finally, this chapter concludes with a brief overview of instructor perspectives on using social annotation.

Researchers continue to study how people learn and the factors influencing learning, including the individual's situated context, culture, relationships with family, developmental stages, and individual experiences (National Academies of Sciences, 2018). Over the past few decades, researchers have understood that learning is a product of both physical processes and environments of individuals. One of these factors is people's culture, or learned behavior that is shaped according to goals and transmitted across generations through social learning (Dirette, 2014; Nasir & Hand, 2006). Culturally, it is expressed through actions, beliefs, expectations, and physical elements like artifacts, tools, and norms for interaction. It is also reflected based on the time and society, where people adapt cultural practices from generations or tailor them to suit contemporary circumstances (Cole & Packer, 2006; Tomasello, 2016).

The conception and development of educational technologies are considered significant educational milestones as they enable flexible interactions, transmission of information, and

multidirectional and collaborative information exchanges (Anderson & Dron, 2011; Siemens & Dawson, 2015). The Association for Educational Communication and Technology (AECT) defined educational technology as the "study and ethical practice of facilitating and improving performance by creating, using and managing appropriate technological processes and resources" (Januszewski & Molenda, 2008, p. 1). Educational technologies include using tools, processes, procedures, devices, and approaches such as mobile technologies, virtual realities, collaborative learning, social networking, and more to support formal, informal, blended, and online learning (Huang, 2019). With the rapid development of these technologies, researchers have studied their importance and relevance to learning and how learning theories and educational technologies are connected (Spector et al., 2014). Different theories of learning influence and lead to different conceptions and uses of technologies that support how students acquire knowledge (Harasim, 2017).

Alongside the evolution of information exchange with technologies, researchers also understand that learning is not mere transmission of information but is constructed socially and culturally (Vygotsky, 1978). Social learning theories posit that learners are active agents and construct new knowledge from their existing knowledge (Anderson & Dron, 2011). This shift to more interactive, dynamic, and socially constructed learning theories was supported by technologies that helped instructors and learners communicate and exchange knowledge, ideas, and perspectives in multiple contexts (Vrasidas, 2000). With these broad ranges of affordances educational technologies provide, the effectiveness and the relevance of educational technologies depend on how they are used by instructors (and students) in a classroom to achieve their course objectives (Bruce & Levin, 1997).

The in-person and online learning shifts to socially constructed knowledge construction and sharing using relevant educational technologies have transformed learning design and development. Instructors facilitate learning through relevant and meaningful domains (Dede, 1996; Jonassen, 1996). The learning process and activities are surrounded by discussion and collaboration in a learning community where students create and understand multiple perspectives to construct knowledge (Vrasidas, 2000).

As this study focuses on using social annotation tools in entirely online courses, I first delve into describing social constructivist and sociocultural learning theories as the theoretical frameworks guiding this dissertation and how they inform learner-instructor-content interaction in online learning environments.

## Theoretical Frameworks

### *Learning as a Social Process*

Research conducted in the past few decades discussed how learning happens cognitively and through individual and social experiences. The book *How People Learn 2: Learners, Contexts, and Cultures* (National Academies of Sciences, 2018) identifies and discusses how cultures and contexts influence learning. This report also compiled decades of research on learning and how, over time, the studies evolved from understanding learning as a linear process of knowledge and skill acquisition to a complex process of interactions over time for people to make sense of their experiences.

These researchers also explain how various characteristics like age, gender, cultural experience, and resources influence learning. People actively encounter problems, ideas, and situations in the world, engage with different experiences, and shape their abilities and skills (National Academies of Sciences, 2018). This implies that learning is both a biological process

and a social process. Following such empirical and evidence-based research, I draw from learning theories that focus on learning as a social, contextual, and cultural phenomenon and how it shapes an individual's learning.

### *Social Constructivism*

Harasim (2017) states that learning theories help us understand how people learn and "determine what we see, what we consider to be important, and how we will design and implement our practice" (p. 4). Understanding different learning theories from major scientific "epistemologies," or the view of how one acquires knowledge, illustrates how learning has been perceived throughout history. One of the early learning theories, behaviorism, suggests that learning happens sequentially with the acquisition of procedural knowledge and terminal behavior testing (Bereiter, 2002; Drucker, 1993). Following this, cognitivist learning theory viewed learning as transmitting knowledge to the mind through information-processing models and constructs (Gagne & Medsker, 1996; Jonassen et al., 1993). Notably absent in these two learning theories is a discussion of the role environments and larger contexts play in an individual's learning.

In the nineties, scholars began to explore the role of culture and context in learning. They also explored the idea of the learner actively constructing knowledge instead of being a passive recipient of information (Winn, 1993). This constructivist theory posits that individuals construct knowledge and understanding through their experiences of the world and their interactions with the community and environment (Duffy & Cunningham, 1996). The construction of knowledge is beginning to be understood as dynamic, multidimensional, and related to internalizing experiences in different developmental stages (Piaget, 1977; Santrock, 2008). Piaget (1977), a biologist and psychologist, discussed that knowledge is acquired through constructive processes

where individuals organize, structure, and restructure their experiences through existing schemes of thought and modify and expand them. Research has since explored that while the basic brain structures and processes are similar, learning happens in different culturally defined ways and contexts for everyone. Learning is now recognized as a complex process of both physical processes and environments to which learners belong.

The role of culture and context in learning is drawn from theories about development by Lev Vygotsky. While Piaget focused on biological human development, Vygotsky investigated the social context of human development. He discussed that the internalization of dialogue by humans leads to speech and thought. Bruner (1962) discussed Vygotsky's approach as "for it is the internalization of overt action that makes thought, and particularly the internalization of external dialogue that brings the powerful tool of language to bear on the stream of thought" (Bruner, 1962, pp. 6-7). Vygotsky argued for the importance of social interactions in human cognitive development, focused on social activity, and viewed it as leading to higher cognitive functions. Cognitive growth happens through children's social interactions with peers or adults with more knowledge. The use of cultural tools developed and adapted by generations as people learn to use them is also discussed as an essential aspect of cognitive development (Wertsch, 1991). Following this stance, researchers discuss that learning happens in multiple social, emotional, cognitive, biological, and temporal contexts and refer to learning as socio-cultural.

Understanding the social and cultural nature of learning is done through detailed examinations of how cultural practices structure and shape our thinking and problem-solving skills (e.g., Gauvain & Monroe, 2012; Rogoff, 2003). These studies informed the idea that learning is embedded in the practices and cultures of communities, and as they change over time, adaptation and transformation happen within them for problem-solving (Greenfield, 2009). The

development of cultural tools and their adaptations, from calculators to the internet, has helped what and how people learn (National Academies of Sciences, 2018). Social theories of learning embrace these ideas, leading to critical theoretical shifts in the propositions about learning being a social process with cultural meaning (National et al., 2009; Tomasello, 2016).

Social constructivism in an online learning environment emphasizes the role of communication using online tools and delivery media. Multiple instructional technologies and computer-mediated communication tools that include synchronous and asynchronous options support learners in articulating their thoughts and perspectives and presenting them to their peers to engage in discussion (Jonassen, 2000). Within the constructivist framework, technology helps design authentic learning activities connected to real life and dynamics (Duffy & Cunningham, 1996). Additionally, emphasis on learner collaboration and participation in online learning courses where students interact with each other helps them with knowledge construction and meaning making (Chametzky, 2014).

### *Sociocultural Theories of Learning*

Since the 1970s, research on learning has also explored the role of culture and context and how they influence individual learning. The influence of culture on learning has been studied from the beginning of life, socially transmitted from one generation to another, and adapted and transformed to fit goals and circumstances (Dirette, 2014; Lave & Wenger, 1991; Nasir & Hand, 2006; Tomasello; 2016). This research thread is also rooted in the theory of cognitive development proposed by Lev Vygotsky, who emphasized the social context of human cognitive development (Bruner, 1962). He focused on social activity and viewed socialization as leading to higher (individual) cognitive functions. Sociocultural theory is rooted in the social constructivist paradigm of learning that posits that knowledge is constructed through social interaction (Lave &

Wenger, 1991). Learning and development occur when individuals interact with other people, objects, and events (Vygotsky, 1978).

The importance of contexts like culture and social settings is emphasized in cognitive development and is mediated by cultural tools like language, artifacts, and symbols (Johnson, 2009). Vygotsky explains that learning and development occur on two levels: First, on a social level during interaction with others and an individual level, and second, within the learners themselves, describing that learning is not limited to social interaction (John-Steiner & Mahn, 1996). Human development happens through progressive and complex interactions between humans and their physical and social environments. National Academies of Sciences (2018) sums up sociocultural theory as the brain provides the physiological platform for learning while the social and cultural influences outside the individual shape it. Learning is socially contextualized, and it happens in the context of experiences, relationships, and cognitive opportunities that are subjectively perceived and experienced emotionally by an individual, and cultural norms shape how and what people think (Rogoff, 2016; Tomasello, 2001).

Sociocultural theory also posits learners as active participants and creators in classrooms that emphasize student-centered learning (Smagorinsky, 2013). The theory also focuses on the learning process as ongoing meaning-making among learners as they participate in discussions and learning activities (Kumpulainen & Wray, 2003; Mercer & Howe, 2012). Sociocultural theory also discusses scaffolding, where instructors progressively support and facilitate learners moving from one cognitive level to another. Instructors are encouraged to design for collaborative learner discourse that leads to conceptual understanding and meaning making (Wenger, 1998).

Sociocultural theory also elaborated on the role of tools and how they mediated the learning processes. These tools can be psychological like languages, signs, or symbols to express thinking, or tools like calculators, computers, and online technologies (Vygotsky, 1978). Sutherland et al. (2004) discussed how the tools can be considered external and internal. The learner initially externally uses the tool with the instructor's facilitation for knowledge construction, and eventually, it supports internalization when they use it for problem-solving and presenting their ideas. Aligned with this idea, effective online learning environments should be designed to include active, engaging interaction among all the participants and include characteristics like meaningful activities, cultural tools, learner uniqueness, metacognition, and reflection. As posited by sociocultural theory, learning technologies and online learning environments offer many affordances to design and implement collaborative discourse. They provide opportunities for discussions in an online platform where learners can explore multiple perspectives, seek common ground, problem-solve, and have contextual understanding (Fecho & Botzakis, 2007).

Social annotation tools support constructivist and sociocultural learning by allowing learners to interact with peers, content, and instructors to construct knowledge, share perspectives, and create meaning together (Zhu et al., 2020). Student participation and interaction with peers on tools like Perusall and Hypothes.is helps build an online learning community, increase collaborative learning, and improve student learning outcomes (Adams & Wilson, 2020; Gharidian et al., 2018; Sun & Gao, 2017). Learner knowledge construction happens in social annotation through negotiation, reflection, and discussion around specific texts (Vygotsky, 1978). The anchored discussion in social annotation fosters learner interaction and

brings out multiple perspectives, replicating more authentic online discussions (Cecchinato & Foschi, 2020).

### *Constructivist Pedagogies and the Role of Instructors*

Following the tenets of constructivism on how learners actively construct knowledge to make sense of the world, constructivist pedagogies focus on how learners develop meaning and understanding. These pedagogies are centered around the learners and their active role in knowledge construction. Vygotsky discussed the importance of social interaction by positing that children learn through interaction and receiving feedback on their tasks. Vygotsky termed this the Zone of Proximal Development, where a child discusses a problem or concept with an adult or a more competent peer to get the required assistance to solve it (Harasim, 2017). Several pedagogical approaches stemmed from this constructivist view of learning, such as active learning, learning-by-doing, scaffolded learning, and collaborative learning. These approaches discussed the role of instructors as the "guide on the side" and not "sage on the stage" (King, 1993), indicating that instructors' role needs to evolve into more of a facilitator.

As discussed above, the instructor's role in an online constructivist learning environment is to guide learners as they construct knowledge (Schell & Janicki, 2013). The instructor facilitates the learning process by providing questions and prompts for students to consider and navigate their thinking, elaborates on the course content, mentors, coaches, and consults with learners (Vonderwell et al., 2007). Researchers also suggest that online instructors set the course climate for discussion, develop course objectives for learner participation and meaning making, and design a learning environment that fosters open communication. Instructors can also facilitate understanding by focusing on various points of discussion related to the course topic, guiding critical thinking, and ensuring knowledge construction and sharing (Gold, 2001).

Online educators who use constructivist pedagogies also argue that instructor facilitation should include effective feedback, a summary of the discussed topics, and promotion of student participation in the discussion platforms (e.g., Graham et al., 2001). Instructors must also know their roles in designing and implementing online courses for diverse learners and their needs. Instructors should also ensure learners engage in discussions that guide their critical thinking, higher-order thinking, and reflection and provide meaningful feedback (Gaytan & McEwen, 2007). Assessment and feedback are essential to motivate learners to participate in learning activities related to the course, and the instructor plays a significant role in helping students achieve their learning goals (Heinze et al., 2007). The role of an instructor in designing and implementing an online course using a social annotation tool is similar to that of a facilitator and mentor who guides learner interaction to move their thinking forward.

### *Designing Online Learning Environments with Social Learning Theories*

Online courses continue to become mainstream in higher education, particularly during and since COVID-19, as they provide the affordance and flexibility for learners to participate in learning from anywhere. Design is an essential feature of online courses. Learning design is a descriptive framework for teaching and learning activities to support educators in adopting effective practices into their courses through various learning activities (Dalziel, 2015; Hernandez-Leo et al., 2018). Online course design is context-specific for courses, including phases like design, facilitation, evaluation, and assessment (Martin et al., 2019). Different course designs are offered in higher education settings - asynchronous, synchronous, and bichronous. Research has identified that learner-content interaction is the strongest predictor for student learning and satisfaction (Kuo et al., 2013). Courses must be designed to meet students' needs

and consider students' prior knowledge, time constraints, and desired competencies (Martin & Bolliger, 2023).

While many studies have investigated online course design, I will highlight recent literature on how instructors design their courses related to this study. Martin et al. (2019) talked to eight instructors who systematically designed online courses. The instructors considered learners' needs, created opportunities for students to interact with content and each other, and had various assignments with rubrics. DeVine et al. (2013) discuss that teaching strategies such as being communicative with students, being flexible, using a facilitator approach, providing continuous feedback, and developing a sense of community can help students succeed online.

Crews et al. (2015) discuss the role of technology and online tools in course design and implementation. Chickering and Ehrmann (1996) remind us that technologies should be used as a lever and utilized consistently with design principles in online environments. Wang et al. (2003) also highlight the importance of designing for adult learners to be active, engaged, and independent thinkers in an online learning environment. Roper (2007) also shares strategies like engaging heavily in online discussion, applying knowledge to real-world concepts, asking questions, and making connections to fellow students as some effective design practices. Grant and Thornton (2007) add to this by sharing the importance of good pedagogy and course design to facilitate learning experiences. This focus on the online course design and implementation also highlights the shift toward constructivist philosophy, where course activities are developed to have an active student engagement and interaction.

A successful online course design and implementation is tailored to the learners' needs, abilities, and experiences (Knowles, 1990). Designing for authentic and meaningful activities should include the use of resources that support student sharing and reflecting on each other's

perspectives. Strategies like engaging students in collaborative and contextual learning activities, providing autonomy, and motivating student discussion and participation are helpful (e.g., Maor, 2003; Martens et al., 2007). Instructors should encourage learner participation on various discussion platforms, provide relevant and timely feedback, and reinforce student participation by setting a higher percentage for participation and response to peers (Maor, 2003). These activities helped learners share and understand each other's perspectives, engage in critical discussions, and support learning.

### *Instructor Online Pedagogies to Support Learner Participation*

Pedagogy is a science that includes awareness of various learning strategies and how, when, and for whom to apply them, depending upon the philosophies instructors hold about learning (Bruner, 1999). Constructivism, as a philosophy, provides a shift in paradigm about learning by discussing how individuals construct meaning based on their experiences and social relationships. Instructors' beliefs and perspectives are essential in understanding how learners construct meaning and how to design learning experiences that facilitate them (McCarty & Schwandt, 2000).

Online courses are designed differently from traditional face-to-face courses, allowing learners to access course material online providing more control over their learning pace and process (Palocsay & Stevens, 2008). Another affordance of an online course is the aspect of interactivity and participation with peers and instructors (Frey & Alman, 2003). Elements like instructors' guidelines, questions, and problem-solving scenarios encourage learner cognitive presence and deep learning (Garrison et al., 2001). Learner interaction and discussion about course content in an online course are essential for learner success (Chen & Willits, 1999). Interactive class participation encourages learners to be critical, apply course concepts in

discussions, and become active and collaborative learners. Researchers also discussed how participation supports reflective learning and promotes higher cognitive thinking (Gravett & Petersen, 2002). Following Chickering and Gamson (1987), researchers identified seven effective pedagogical practices for online learning: encouraging contact between learners and instructors, learning as a team effort, active learning with discussions, timely student feedback, using one's time well, communicating higher expectations, and providing a diverse delivery system (Brew, 2008; Morrison & Finnegan, 2008; Palloff & Pratt, 2005).

While these activities support learning, the role of instructors in this process is essential. Learning experiences in online environments should be designed for learners to reflect on readings and their peers' experiences, elaborate on the discussions, and pose questions that provoke learners to think critically (Keeton, 2004). Researchers also suggest that instructors in an online setting should take on the role of a facilitator (King, 1993). Instructors in online courses need to focus on guiding students to collaborate to understand course content, relate it to their personal experiences, and encourage student initiative and participation with each other (Palloff & Pratt, 2005).

Studies on online learning also explore how effective online learning focuses on instructor pedagogies that provide effective student feedback, encourage student participation, and take up social roles (Hogan & McKnight, 2007; Morris & Finnegan, 2008). Instructor guidance, facilitation, and interaction help establish a sense of learning community in the online environment (Desai et al., 2008). Faculty who adapts their designs and pedagogical roles to suit an online environment provide prompt student feedback and encourage them to engage with content and each other actively are successful (Morris & Finnegan, 2009). Balkin et al. (2005) discuss how instructors require training and professional development to design effective student

collaboration and participation and adapt their teaching strategies to online settings. They also need guidance on using relevant technologies in their course design and implementation (Gabriel & Kaufield, 2008). As many researchers highlight, this can be done only by providing valuable theoretical underpinnings for using technologies in online learning (Harasim, 2017).

Another factor contributing to a successful online teaching experience is the relevant use of technologies and embedding them effectively into the course curriculum (Bailey & Card, 2009). Technology used in the course should be compatible to support student and instructor needs (Osman, 2005). Online course design should include different content exploration and transmission methods and opportunities for students to have open conversations, discussions about course content, and reflection (Liu et al., 2010; Tee & Karney, 2010). Tee and Karney (2010) also note that online discussions in an efficient platform can bring out student insights and perspectives that may have yet to come out otherwise.

Over the last two decades, there has been an immense increase in participatory technologies, which have reshaped how one can access information and construct knowledge. Participatory technologies also shape teaching and learning by providing instructors with tools to support reflective, collaborative learning, increase student autonomy, and create learning communities. The instructor's role is necessary to understand how learners construct meaning (McCarty & Schwandt, 2000). Instructors must shift and modify their pedagogical approaches to embrace participatory technologies in the classroom and move more towards social constructivist and learner-centric approaches. The literature on online learning identifies the importance of learner-centered strategies, learner participation in structured online discussion platforms, collaborative learning activities, and interactive participation as ways instructors can support constructivist learning through pedagogy (Mason, 1998). While online learning and the

affordances of multimedia technologies provide opportunities for learners to participate, an engaging online discussion depends on the individuals and how the discussions are structured (Mason, 1998).

Participatory pedagogy is an approach where learning is focused on students, allowing them to create course content and structure through active creation (Siemens, 2008). Kumpulainen et al. (2009) elaborated that participatory pedagogy relates to a sociocultural approach to learning and addressed that participatory pedagogy allows learners to position learners as agents. Participatory interactions of learners can influence the course when students bring topics from their contexts to the classroom and promote each other's participation in their learning environment (Kumpulainen et al., 2009). Participatory pedagogical approaches support a dialogic learning culture that aims to support student learning experiences.

With the use of relevant Web 2.0 technologies and the collaboration between instructors and students, it is possible to establish participatory pedagogy in an online course. DiPietro (2013) discussed how participatory pedagogy involves an interactive learning environment where instructors have students use technology tools in the class, understanding how they take in the information and learn with these technologies. DiPietro (2013) designed a case study with undergraduate students where they were asked to collaborate on a media-rich assignment for a new media course. Students were put into groups and worked on a project that followed the instructor's guidelines, and then they were observed on how they worked together and used technology in the process. The study revealed that students actively shaped their experiences, contributing to the instructor's teaching methods based on their desire to learn and complete the project.

Participatory pedagogy also highlights the importance of the instructor being a facilitator in the classroom, designing and reiterating the curriculum based on student feedback (Farkas, 2011). The instructor creates an online learning environment that allows a flow of ideas between students, introduces diverse perspectives when students only seek out ideas that confirm their beliefs, and adjusts their approaches based on changing student needs (Farkas, 2011). As Farkas (2011) shares, participatory pedagogy also focuses on classroom dialogue and questions for students that let them explore various approaches to answer them. Students should also be allowed to work in groups to develop collaborative knowledge construction (DiPietro, 2013). Bobish (2011) suggests that technology tools like wikis and blogs can help engage students in active discussion, communication, and learning. These studies highlight that online learning is supported through participatory pedagogies that include high-quality interactions between students and instructors (Siemens, 2005), collaborative use of technologies (Kennedy et al., 2008), and effective instructor facilitation (Mandernach et al., 2009).

### *Student Participation and Collaboration in Online Learning*

Researchers and educators continue identifying and understanding the factors enhancing online learning. The dialogue between learner-learner, learner-content, and learner-instructor (Moore, 1989) is vital in online learning environments as it promotes active and collaborative thinking. Collaborative learning through interaction, participation, and building on each other's ideas in an online course is identified to be constructivist (Ashcraft & Treadwell, 2008). Meaningful interaction in an online setting builds critical thinking, team, and community-building skills and effectively addresses course goals for students (Du & Wagner, 2007; Lock & Redmond, 2006). However, studies also highlight that effective collaboration and participation cannot be translated from a face-to-face teaching practice into an online setting but can be

curated to suit their online course context. Using relevant technologies designed and tailored to support student participation can increase student interaction and a sense of community (Anderson & Simpson, 2004; Chou & Chen, 2008). Embedding interactive elements through online technologies (like discussion posts and social annotation tools) in online courses has been studied to increase perceived interaction among learners-instructors-content and help them with the course outcomes (Banna et al., 2015; Martin & Bolliger, 2018).

Like a social annotation tool, a text-based discussion platform can help learners annotate course readings and interact with peers. Learners can make annotations, share, and respond to their peers to build upon each other's ideas and make meaning (Beach, 2012). Social annotation in higher education has been used for language learning, collaborative knowledge construction, fostering conversations among educators, and assessment (Kalir & Perez, 2019). As a mediation tool, social annotation allows learners to view peers' thoughts, interact with them, and engage in text-based conversations for knowledge construction. The next section of this chapter elaborates on social annotation, how it has been studied concerning online teaching and learning, and the research gaps related to this study.

**Social Annotation**

Annotation has been a part of the history of reading for a long time (Wolfe & Neuwirth, 2001), where annotated marginal notes were often transcribed along with original texts when a manuscript was copied. Often used recently to promote critical reading, annotations have been studied to develop active reading in learners that improves critical thinking and meaning making on a deeper level (O'Dell, 2020). Novak et al. (2012) define social annotation as "an online social bookmarking tool that allows annotating (adding comments, highlights, sticky notes) of an electronic resource and supports easy online information sharing" (p.40). While physical or

digital annotations can impact individual readings, social annotations in an online learning environment also provide a collaborative dimension to individual annotations. Social annotations provide readers/learners with an affordance to read and interact with text and peers in a shared context (Novak et al., 2012, p. 40; Cohn, 2019). This practice has been studied to develop a contextualized and focused discussion space for learners (Gao, 2013), aid in knowledge construction (Plevinski et al., 2017), meaning making (Kalir, 2020), and interdisciplinary teaching and learning (Reid, 2019).

Social annotation helps learners interact with course documents and helps them with the compilation of resources, information seeking, and collective sense-making (Glazewski & Hmelo-Silver, 2019; Kalir, 2019). They also help construct learner knowledge as they interact with the text and peers while socially annotating course readings (DiIorio & Rossi, 2018). The theoretical orientation of social annotation that views learning as social and collaborative helped researchers study how SA as a social technology shapes student engagement in learning ( Halic et al., 2010; Martin & Bolliger, 2018). Particularly in higher education settings, many studies have looked at student perceptions of social annotation activities, peer interaction, and value in social learning contexts (Chen & Chen, 2014; Kalir, 2019; Kalir, 2020).

To understand instructor experiences using social annotation, I needed to review the existing literature on social annotation in online learning. This section details a brief review of the literature on the topic. Social annotation in undergraduate and graduate online courses has been studied in the past two decades. The research falls into two main categories — SA tool evaluation and student-oriented measures. In this review, I only briefly summarize the SA tool evaluation literature because it is not directly relevant to my study. I summarize SA-informed student-oriented measures like knowledge construction, collaborative learning, contextual and

subject-specific learning, and assessment. These studies elaborate on student experiences and learning outcomes but seldom discuss instructors' pedagogical choices, design, and participation with social annotation.

### *Social Annotation Tools*

Annotation has been a popular activity for many centuries, both as a private practice and a form of communication with others (Anderson, 2011; Wolfe & Neuwirth, 2001). It has typically promoted active and critical reading in learners by forcing them to slow down and be aware of their thinking, processes, ideas, and connections in the readings (Donnell, 2004). Social annotation adds a collaborative dimension to annotation, where learners read and annotate with other learners online. Some examples of SA tools include Hypothes.is, Perusall and Diigo. SA tools support learners by providing learners with the affordances to annotate digital texts and respond to what others have written online. Blyth (2014) discusses that SA tools also allow learners to make individual and critical contributions to course readings through annotations, thereby coming out of passive reading practices.

Social annotation tools vary in features and purpose in online social reading and writing. Perusall is a collaborative reading annotation tool designed to improve student reading rates. Perusall does this by scoring student annotations to encourage them towards a more social learning environment. It has been developed to be simple and intuitive for teachers to either work directly with their website or integrate it into their course Learning Management System (LMS). Many files like PDFs, EPUB files, and Word and Excel documents can be uploaded to the site, adding custom features like minimum annotations, specific dates, and grades (Clarke, 2021). It also has simple navigation features for students' use. Learners can create an account or work through their LMS, contribute to annotations asynchronously, flag questions and inquiries, and

provide reinforcements and feedback to peer annotations. These features have been designed to be collaborative. Similarly, another SA tool called Hypothes.is has been developed for the collaborative reading of online course materials. Hypothes.is is free, open-source software that allows learners and instructors to highlight and annotate online text (Shrout, 2016). Learners have different options (only me, public, group) to annotate their readings, and instructors can set up groups according to their preferences for learners to annotate and interact with their peers as they read.

SA tools have also been explicitly designed for specific learning contexts, for instance, to support the reading and writing instruction of English as a Foreign Language (EFL) learners. Lo et al. (2013) developed an annotation tool called the Paragraph Annotator and studied how it impacted student reading comprehension. The authors note that the tool was designed for interactive reading and provides features like highlighting (topic sentences, controlling ideas, supporting details), comments, and a dictionary that helps learners with interactive reading. The tool supports learners with identifying paragraph structure and enhancing their reading. It allows readers to analyze paragraphs by marking down paragraph elements and adding comments to the highlighted elements with different colors to visualize the paragraph structure and easily understand the critical elements of a paragraph. It also includes a supportive reading strategy button where students can look up new and unknown words by highlighting them, using the dictionary button, and looking them up on Yahoo Online Dictionary. Similarly, SA tools like Online Annotator for EFL writing (Yeh & Loh, 2009) were also developed and used for corrective feedback and error analysis for EFL learners.

***Social Annotation for Learners***

Student participation through interaction is an essential element of active learning, where students engage in conversations about the course content (Bloom, 1984; Fleming, 1987). Ingram and Hathorn (2004) specify that student collaboration and knowledge sharing are crucial for student learning in an online learning environment. Liu et al. (2007) discussed how a sense of community, student engagement, and participation play a significant role in online learning. Collaborative learning experiences enhance student critical thinking, shared perspectives, and feedback, developing student participation and connectedness (e.g., Holley & Dobson, 2008). These supportive and sustained conversations help students share their thoughts and ideas and construct knowledge collaboratively in a safe online environment to support their understanding of course topics (Snyder, 2009). A vast body of literature delves into how social annotation tools in online learning support students' measures like collaborative learning, knowledge construction, and domain-specific learning. The sections below briefly review some of these studies and their recommendations on focusing on instructors, their design, and pedagogies to maximize student learning.

### *Social Annotation for Online Collaborative Learning*

The educational use of social annotation tools in higher education has been studied during the past two decades. SA tools have supported many learning practices like reading comprehension, peer feedback, and collaborative learning (Gao, 2013; Kalir, 2019; Schacht, 2015). Researchers have also studied how SA supports group-level processes in CSCL, collective expression, negotiation, and meaning-making (Stahl, 2017; Kalir, 2020). Many studies on social annotation discussed how having a shared, contextual learning space to interact and comprehend course materials can help learners with collective meaning-making. Social

annotation can help instructors design for learners' online collaborative learning, co-construction of knowledge, collective expression, and negotiation (Kalir, 2020; Stahl, 2017).

Gao (2013) used a case study approach with undergraduate students to study student interaction and learning supported by a social annotation tool called Diigo. The researcher developed a coding scheme to analyze student annotations and the types of interactions while reading course materials. They also gave Likert-type survey questions for students to rate their experiences with the annotation tool. The study's findings indicated that students actively participated in the collaborative learning activities, posted far more comments than required, and the posted annotations were specific to the sections of the text they were discussing. The survey responses also reiterated the results, with students mentioning that the annotations helped direct their attention to the specific sections of the article. However, students also indicated that annotations made getting a holistic perspective of the article difficult. The researcher discussed that to be more effective while using social annotation, instructors should embed more questions and prompts within relevant sections of the text, design synthesizing or summary activities for students to understand the reading and recommended that future studies focus on identifying learning tasks and objectives that best suit social annotation.

Sun and Gao (2017) compared social annotation and threaded discussion forums to support collaborative learning in an undergraduate online course for preservice teachers. Their study findings illustrated the different types of affordances the two environments provided and how they impacted learner participation. The authors discussed that learners posted more comments on the annotation platform, but the comments on the threaded discussion forum were much longer. Findings also showed that Diigo's annotation tool allowed students to focus on specific parts of the online texts rather than a summarized reading discussion. Learner

annotations were, therefore, detailed, and specific, in contrast to the comments on the discussion forum, which were general and surface-level. The types of interaction in both platforms also differed starkly. Self-reflection and alternative/commentary were the main interactions on the threaded discussion forum.

In contrast, alternative/commentary, self-reflection, internalization, and elaboration were evenly distributed in learner interaction on the annotation tool. The authors suggested that both platforms provided different affordances for learners, impacting their participation in the environments. The study also indicated that social annotation tools can be used by instructors to design for learners to focus on specific aspects of the readings and collaborative discussions with peers. On the other hand, threaded discussions can be used to summarize course material reviews.

Johnson et al. (2010) studied how social annotation can improve first-year college students' teaching and learning through various instructional strategies like team-based learning with a collaborative learning annotation tool called HyLighter. Researchers conducted two studies where students participated in reading course articles and doing individual and group annotations with peers. They studied student reading comprehension, critical thinking, and metacognition when students made individual and group annotations where they responded to peers. Study 1 with individual annotations only showed improvement in student critical thinking skills over the course period. Study 2 significantly improved students' reading comprehension and metacognition when annotating texts with teams/peers. The study suggested that student engagement and discussion with peers using the annotation tool led to more significant learning and improved comprehension of course content due to communication. The authors

recommended further research into instructional strategies and conditions focusing on students' learning processes and skills.

Following this, two other studies were conducted in 2012 by Razon et al. (2012) using the same annotation tool, HyLighter, to test undergraduate students' learning comprehension, learning-related affect, and motivation. Like Johnson et al. (2010), Study 1 looked into students' doing individual annotations for course readings, and Study 2 looked into students reviewing and commenting on peers' annotations. The results were also similar, with Study 1 not showing any significant differences in student motivation and emotion associated with learning but a higher frequency of positive emotions and learning motivation than those who did not use the annotation tool. However, Study 2 did not show significant student affect and motivation results when using individual and peer annotations. In conclusion, the authors suggest that instructors must actively guide and participate in collaborative annotations to enhance student use and learning. They recommend future research to examine the aspects of instructional support that promote student learning with social annotation.

These arguments were also supported by Zarzour and Sellami (2016, 2018) in two studies conducted on the impact of collaborative annotation with linked data technology and learning achievement. The 2016 study examined Algerian university students' attitudes toward the annotation system and its impact on learning achievement. The findings showed that the students who learned with the annotation system achieved significantly better outcomes than those in the other group. The 2018 study investigated Algerian undergraduate students' learner attitudes, motivation, and achievement as they used collaborative annotation with linked technology. The findings of this quasi-experimental study also reported the potential of social annotation on student interaction, enhancing their learning achievement. Students in the control groups made

more private annotations while reading the materials, and those in the experimental group spent more time on reflection, sharing linked private annotations with peers, and having in-depth discussions. Students' motivation and attitudes towards the course were also significantly higher for the experimental group. These studies concluded that social annotation tools provided learners with learning opportunities to share, review, and comment on their instructors' and peers' annotations, contributing to their learning outcomes.

Similarly, Adams and Wilson (2020) studied how Perusall, a collaborative annotation tool, supported the development of the community in an asynchronous online graduate course. They discussed the development of the community in an online course while working on tasks and assignments that capture learners' in-process thinking instead of focusing on summative understandings and discussions on a threaded board. Their study used a social annotation tool to focus on during-reading discussion asynchronously. The study used a design-based research approach to collect and analyze learner annotations. The findings showed an increased text and peer-to-peer interaction of learners on the annotation tool. The learners' interactions showed evidence of mutual engagement, shared repertoire, and collective meaning-making while capturing student thinking processes during interactions. Chan and Pow (2020) looked at the role of social annotation in collaborative inquiry-based learning in undergraduate students. A few other studies (Kalir, 2020; Michelson & Dupuy, 2018) also recommended widening the research into social annotation to look into different learner-peer-instructor interactions and how they relate to collaborative learning.

### *Social Annotation for Collaborative Knowledge Construction and Sharing*

Asynchronous discussions facilitate online learning's reflective, collaborative, and knowledge-construction processes (Gao et al., 2013). Following the critiques on the design of

threaded discussion forums, researchers turned to social annotation tools to support more profound, meaningful construction of knowledge anchored within reading online course texts (Gao, 2013; Plevinski et al., 2017). Yu et al. (2010) designed a Personalized Annotation Management System (PAMS 2.0) to explore student annotation behaviors, manage and share individual and collaborative annotations, and discuss annotations. The study showed that university students found that PAMS 2.0 helped them think critically about understanding their peers' annotations, and they showed higher learning achievements than those in the control group. The study showed improved learning outcomes due to annotation, mainly when learners shared and discussed annotations. As one of the first studies exploring collaborative knowledge sharing, this study recommended focusing more on the curriculum design, activities, and instructor and assigning articles to maximize learner participation.

In a similar study by Yang et al. (2011), the authors examine whether the same tool, PAMS 2.0, helps learners raise questions and provide answers as they read, comment, review, and discuss assigned readings online. The study used an experimental approach to understand if annotation-based collaboration enhances learner knowledge sharing in online group reading activities. For five iterations, the average student reading scores of experimental and control groups were compared before and after the group reading annotation activities. Results showed that the experiment class achieved a much higher average after using PAMS for collaborative reading and discussion than the control group that did not use annotation tools. Following these findings, the authors discuss the need to extend the use of similar annotation tools for online communication and collaboration in communities of practice.

Studies have been conducted during the past two decades to understand the impact of social annotation activities on learners' collaborative knowledge construction. Eryilmaz et al.

(2013) studied learning by social interaction by looking into anchored discussion as an alternative to threaded discussion forums. Conventional discussion forums require learners to switch back and forth between the part of the discussion they intend to respond to, thereby reducing the link between discussion and study material (Van der Pol et al., 2008; Wolfe, 2008). Using anchored annotation messages specific to the text or material helps learners contextualize their knowledge construction to specific learning content. Using the Annotation Tool developed by the authors, this study showed that the annotation functionality increased two types of knowledge construction activities in learners: assertion and conflict. The authors explain that the shared focus of the annotation functionalities helped learners express complex ideas, recognize flaws in peers' reasoning, and create new ideas. The study also highlights that annotating and connecting a text with related discussion can improve discussions' quality and individual learning outcomes. These findings have also been reiterated in a later study by Plevinski et al. (2017) to study how anchored annotations support the collaborative knowledge construction of graduate students in an online class.

While these studies elaborate on the impact of social annotation activities on learner knowledge construction and sharing, their implications for further research go beyond learner focus. The authors discuss the need to be intentional about the goals of online discussion in choosing the right platform, design, and delivery affordances for instructors to create opportunities for maximizing content comprehension.

**Social Annotation for Language Learning and Literacy**

Another central area of social annotation research is literacy and language learning. Understanding how SA has been used to teach English as a Foreign Language (EFL) in university settings can help instructors design contextual and subject-specific activities for

learners. Researchers discussed that identifying the nature of reading has challenged learners in the EFL context. To address this and design active class environments for students to be more responsive to peers and instructors, annotating while reading is considered a valuable strategy for language learning. Lo et al. (2013) developed and used the SA tool, Paragraph Annotator, for university students learning English. The tool offered affordances like highlighting, commenting, and dictionaries to support learners with interactive reading. It also helped them learn paragraph structure in online texts and allowed them to analyze paragraphs, mark down different elements in the paragraph, and add their perspectives to the paragraph text. Students were given an essay related to English language reading to read, annotate, and take two reading tests based on their reading. Students who used the tool performed significantly better on the reading comprehension tests compared to those who did not use the annotation tool.

More researchers studied the role of social annotation in EFL education in online settings. Solmaz (2020) studied the use of digital social annotation called SocialBook on second language socialization of EFL learners in an undergraduate reading course. Language socialization is a process of novices interacting with the experts of a particular community to socialize in it by using semiotic resources and literacy practices in an online space (Solmaz, 2020). During week 1, the instructor uploaded the reading and annotated comments, questions, images, and links and was purposefully active in the week's discussions to help students become familiar with the tool and the activities. From weeks 2-5, students were asked to form groups of their own, and each group member was asked to find readings, upload them to the annotation tool, annotate them, and initiate the conversation and discussion on the platform. From weeks 6-8, students were encouraged to participate in group and non-group members' readings. Data was collected from a pre-study survey, student annotations, and reflection journals. The author

discussed that many students found the annotation tool enabled them to socialize in the communities they constructed and helped them co-construct meaning and incorporate ideas in discussions. Students also mentioned they could improve their viewpoints on various topics due to members' multiple perspectives. Content analysis of annotations showed how students take on novice and expert roles while choosing and guiding discussions of readings they selected. Multiple annotations like praising, suggesting, and sharing resources, developing interpersonal relationships, and clarifying questions were evident. The findings also indicated that while they followed the structure set by their instructor in the first week, they developed their discourses as the weeks progressed and moved beyond the instructor's structure. The features of the annotation tool also allowed students to engage in hybridized communicative practices (e.g., integration of linguistic and textual practices like the use of language and emoticons or abbreviations) that are essential for EFL socialization.

Learner-learner interactions were also studied using an online annotation tool for collaborative learning in Second Language Learning. Thoms and Poole (2018) studied the linguistic, literary, and social affordances and interactions among learners using the online annotation tool HyLighter for a Spanish poetry course. None of the students indicated that their native language was Spanish. All the students were given three to five poems per week during four weeks of the course that they read and commented on for this study. During the 4-week study period, students' annotations and comments to peers were considered the analysis assignments of the poems they read. Students were asked to make at least one individual annotation on each assigned poem for the week and respond to another student's annotation on each poem. The findings indicated that engaging in collaborative reading through online social annotation can help learners with a closer reading of texts and an interactive social community

among learners and instructors. However, the authors discussed that it is vital for instructors to consider how to structure the annotation tasks carefully. Some challenges they mentioned included students feeling unnecessary pressure to contribute something novel or meaningful when their peers have already commented and instructors carefully designing for assessing and supporting students' second language learning and proficiency, or the course objectives, instead of merely annotating and commenting.

Tseng And Yeh (2018) used Google Docs with undergraduate EFL students to study reading and language comprehension skills. Annotation strategies were found to help students from a passive reading of course texts to a deeper understanding. Other researchers also elaborated on the affordances of social annotation in language acquisition (e.g., Thoms et al., 2017; Yang et al., 2013). All these studies discussed that social annotation tools allow learners to read the text closely, construct meaning with their peers, and discuss meaning and perspectives about literary texts through social annotations. These studies also indicated that social annotations allow learners to be engaged non-traditionally and improve their reading comprehension in the context of reading and language learning.

### *Social Annotation for Feedback and Assessment*

Social annotation researchers have also explored its relevance in instructor and peer feedback and assessment. The SA and assessment research can help instructors design peer and instructor feedback and assessment of learners' annotation activities. Instructors can annotate the excerpts they want the learners to focus on. For example, Yeh and Lo (2009) discussed this process of providing feedback to learners via SA by addressing specific areas that need improvement in second language learning. The authors discussed the importance of constructive feedback, interactive feedback, and error correction strategies that guide them in becoming

independent writers. This study used the Online Annotator tool to understand its effectiveness in undergraduate students' error recognition and correction for EFL writing. It addressed the relative effectiveness of computer-based corrective feedback to paper-based feedback on students' error recognition. Students were asked to write a short essay about their favorite celebrities. One group of students was rated by the instructor using paper-based feedback, and the other group used the editing feature of the annotation tool. The instructor gave feedback about the errors made by the students, the nature of the errors, and the correct language form. While both groups of students received similar feedback, the annotation group could see the errors they made in the document viewer and analyze the result features of the tool. Students were then asked to write another essay about their lives as undergraduate students, which was graded similarly. Grading the second essay revealed that the student group that used the Online Annotator tool identified more errors, missed some incorrect texts, and developed error correction strategies compared to the group that used the paper feedback group. This study showed how online social annotation can scaffold students by identifying and reflecting on their errors in a second language or EFL writing.

Yeh et al. (2014) extended the research on error correction and feedback in their 2014 study on EFL writing instruction. Using online annotation activities, they developed a web-based error correction practice system for error correction and peer feedback. They evaluated the effect of the annotation system on student writing and peer feedback performance. They also designed the system for instructors to conduct strategy training for error correction practice and peer feedback activities. The findings of this study also showed significant differences in writing error ratios among learners. They improved writing performances and peer feedback accuracies, particularly for low-level learners with difficulties identifying writing errors in their texts.

In another study, Lin and Lai (2011) developed an Annotation-Sharing and Intelligent Formative Assessment (ASIFA) system to provide formative feedback to learners instead of evaluating them for grades. Their study uses online collaborative annotations as formative feedback by having students annotate collaboratively on the annotations with the instructor. Lin and Lai (2013) expand on this previous study by designing continuous formative assessment activities with collaborative annotations to improve student participation and performance on final summative assessments. These studies use social annotation techniques and affordances to enhance student learning achievements.

### *Social Annotation and Instructor Perspectives*

Studies on social annotation extensively discuss student perceptions, experiences, and challenges with various tools. Few SA studies focus on the instructors, their experiences, design, and pedagogical processes. Even though many instructors in higher education are interested in supporting deep reading and comprehension of academic texts, multiple factors pose pedagogical challenges for instructors, including adding a new tool to their learning contexts, designing topic and genre-based reading strategies for digital texts, and encouraging and engaging with learners in collaborative reading practices, grading, and assessments.

Lebow et al. (2011) shared the experiences of three professors with the annotation tool Hy-Lighter and the learning and assessment activities they designed in three different areas. The first professor used the tool for a screenplay writing course for their students to read and evaluate each other's work critically. Discussing student scripts and having them provide substantial peer and instructor feedback was challenging, but Hy-Lighter helped review and provide feedback. The professor also discussed that implementing the tool Hy-Lighter brought new relevance and meaning to classroom discussions. The annotation activities created a sense of community,

shared purpose, and enhanced learning experiences among students and the professor. A second professor used Hy-Lighter as an additional assessment tool for asynchronous, text-based courses on graduate-level Forensic Toxicology. Students either commented on a highlighted area by the professor or independently highlighted and annotated the text as an assessment. Students were also encouraged to see each other's annotations and engage with them before submitting their answers. This design choice indicated that students could acknowledge and correct their mistakes based on others' comments, transfer knowledge acquired to written modules, and evaluate their answers with peers using collaborative discussion approaches. Finally, the third professor used the Hy-Lighter tool for enhanced multiple-choice testing, where students were required to answer multiple-choice questions and annotate the reasons for their responses. The professor designed this activity to understand students' knowledge of what they were confused about or failed to grasp and provide them with relevant feedback. This activity also helped students see models of good explanations from their peers. This study indicated different cases of activity design with social annotation tools in different subject areas. This article discusses instructors' experiences using the Hy-Lighter tool and presents the thinking and pedagogical processes of the instructors.

These arguments are also supported by (Wright et al., 2013), who used the PDF annotation tool Nota Bene for undergraduate biology students, and their annotations were analyzed based on their responses and collaborative discussions. The authors discussed the importance of effective instruction to understand and support students' needs and indicated that social annotation tools can help provide instructors with mental models and ideas students bring to the classroom. They also mentioned that using a social annotation tool for class discussions shifted the classroom culture towards a student-centered approach, with the role of the instructor

changed to a facilitator. This study also highlighted how an online annotation tool could help instructors guide learner participation, encourage them to ask questions, and get a deeper understanding of concepts.

Schneider et al. (2016) examined the shifts in pedagogies and learning experiences enabled by the Lacuna social annotation tool. This study explored the perspectives of two instructors on integrating the tool into a graduate literature course and students' experiences with annotating with the tool. The course was designed for students to make 20 weekly annotations from each student. Instructors discussed that one of the significant pedagogical shifts was to design for students to annotate and react to readings. They mentioned that instructors had to increase their engagement with the course to comprehend the understanding of students better. Annotation activities also resulted in meaningful and intense conversations with students. While instructors mentioned how sometimes students diverged away from the themes related to the course text, designing for flexibility, and identifying struggling or difficult areas in student annotations helped them prepare better for the class. The instructors also highlighted the time spent reviewing student annotations, which they said was only possible with a teaching assistant. The two instructors also discussed how annotations helped get to know students better related to their reading and thinking, as they brought their annotations back to the class and addressed themes in their comments. There were also varied types of negotiation in class, as instructors found places in the readings where students had the most confusion, difficulty, or disagreement and how they addressed those issues. Instructors' perspectives in this study detailed the design processes to create authentic dialogue, deeper learning, and flexibility in interpretations of readings. They acknowledged the importance of social annotation tools while highlighting the

need to negotiate the space for students to discover their perspectives while guiding them through their learning processes.

Clapp et al. (2021) discussed in their study how social annotation became a "signature pedagogy" in literature studies for instructors, as they used the tool Hypothes.is in undergraduate literature courses. Ten instructors who participated and designed social annotation activities were invited to a round table to discuss their experiences. The authors shared that instructors found annotation activities to be engaging for students as more students participated actively. Instructors also indicated that student responses provided a way for instructors to understand their thinking processes and observed that students felt comfortable discussing their opinions. Instructors' discussions also revealed how they could indicate and highlight compelling performances in literary analysis that allowed students to follow them as benchmarks for further responses. The only downside to annotation activities that instructors discussed is the time spent on the annotation activities instead of face-to-face discussions. While this study attempted to get instructor perspectives on social annotation, most conversations were limited to their observations on student annotations. The study did not delve into instructors' design and pedagogical processes in teaching undergraduate courses in literature education.

Sievers (2021) presented an elaborate, action-based study on her experiences teaching digital reading with social annotation. The author discussed that using a tool like Hypothes.is in an introductory literature course is valuable for learners to develop closer reading skills, construct arguments, and co-construct knowledge through interpreting the text. Sievers outlined several modified goals as she redesigned the course to embed social annotation tools – reading with attention to detail, looking up information, asking reflective questions, and developing nascent interpretations to full arguments. She also elaborated on her design strategies that

focused on the course objectives; annotations were required for every reading and were considered essential for critical and close reading of text. These were graded as complete assignments if they posted the required weekly annotations. The second strategy consisted of informal writing and analysis students completed based on their annotations. The assignments included blog posts for students to interpret texts they annotated, and a final assessment included a formal essay. An optional/additional strategy was to create and link their peers' annotations in their blog posts or essays. The author discussed the effectiveness of these pedagogies using two approaches (asking students using survey questions and observing and analyzing their writing assignments). Student consensus on annotation activities was helpful, as students commented on helping them understand the text better. Student social experiences and connections between activities and reading skills were less relevant, as students mentioned completing required annotations or responding to peers only as a requirement. The authors' observation and analysis of annotations showed that students were asking questions, modeling the reflective practices of their peers, and effectively drawing from annotations for their formative assessments. The study elaborates on an instructor's case study on her experiences and pedagogies with social annotation. It is an example of the type of research needed in social annotation – a focus on the instructor's choices, reasons for using social annotation tools, and their intentions behind pedagogical choices.

Instructor perspectives on using social annotation tools highlight that the choice of tool and design should align and reflect the learning outcomes for the class, emphasizing student perspectives. Instructors should also be intentional and aware of the time, pedagogical choices, and participation they intend to contribute to the annotation activities they give, as this takes out

additional preparation time. There is also the need to focus on instructors' thoughtful design and use of these tools to achieve the intended pedagogical impact.

## Chapter Summary

In this chapter, I provided an overview of the learning theories related to this study and reviewed social annotation research in higher education. This literature review identified gaps in the SA research and illuminated recommendations for future research to focus on instructors, which is the rationale for my study. In the next chapter, I describe this dissertation's research design.

# CHAPTER 3: METHODOLOGY

This dissertation explores how and why online undergraduate instructors use social annotation in their classes and their perceptions and challenges in implementing SA. Instructor perspectives on their design, pedagogy, and participatory reasons for using social annotation in online classes can contribute to understanding course design and implementation with SA. This qualitative case study focuses on instructors' perspectives, processes, and problems in using SA activities related to pedagogical goals by using a qualitative case study approach to address the following questions.

1. Why are instructors using SA in their UG online courses?
2. How do instructors design and implement activities with SA?
3. What are instructors' participatory pedagogies in implementing SA in their UG online courses?

## Pragmatism

As a qualitative researcher, my positionality, epistemological stance, and background influence the study's conceptualization and implementation. As an online learner, I used SA in my courses and started designing and implementing SA tools in the online classes I have been teaching. Many of my teaching practices were inspired by my experiences as a learner. I want to learn how instructors use SA to enhance student participation and learning. So, for this study, a pragmatist approach helps me understand how this study informs practice. Pragmatism focuses on constructing knowledge and its products through an active inquiry process (Dewey, 2008; Morgan, 2013). Pragmatism adopts a value-oriented approach by focusing on action rather than theorizing (Johnson & Onwuegbuzie, 2004). Pragmatism also elaborates on how multiple

theories and perspectives can coexist to be helpful to practice and practitioners (Johnson & Onwuegbuzie, 2004). Pragmatism welcomes different research methods to answer research questions to inform methodological choices that are relevant, practical, and applicable (Cresswell & Plano Clark, 2011).

Johnson and Onwuegbuzie (2004) shared that pragmatic research is based on a practice-based problem and not a search for truth, and that is how this dissertation study has been conceptualized. Grounded in the pragmatic purpose, in this research, I sought to understand why undergraduate online instructors transitioned or started using social annotation tools, how they designed and implemented learning activities with SA that maximized course objectives, and how their pedagogical processes supported the implementation. I focused on instructors, their perspectives, and how their experiences with SA tools guided their design and pedagogical processes. Through this focus, the study's findings lay the foundation for other instructors looking to transition to SA or similar tools to improve their teaching experiences and enhance student learning.

## Methodology and Methods

### Qualitative Case Study

Merriam and Tisdell (2016) state that qualitative research is conducted to "achieve an understanding of how people make sense out of their lives, delineate the process of meaning-making, and describe how people interpret their experience" (p.15). Qualitative research is also committed to studying a phenomenon in depth, bringing out uncertainties, and seeking clarification of specific factors (Sandelowski, 2010). A qualitative methodology is appropriate because it aims to elaborate on *how* and *why* instructors use SA.

Case studies satisfy the tenets of qualitative research: describing, understanding, and explaining interpretation in context (Tellis, 1997). Merriam (1998) defines a case "as a phenomenon of some sort occurring in a bounded context" (p.27) and explains that a case can be a person, program, group, policy, and so on. She describes a qualitative case study as an intensive, holistic, and bounded phenomenon of a social unit. This view aligns with this study's purpose. Merriam (1998) mentioned that qualitative case study designs are suitable for understanding educational phenomena. They are intensive descriptions and analyses of a bounded system, making them different from other qualitative approaches. This qualitative case study is bounded by instructors using social annotations in their undergraduate online courses at one institution.

Yin (2009) notes that a case study is a relevant methodology for "how" and "why" questions asked about an event or a phenomenon. Merriam (1998) expands this idea by stating that case studies help researchers understand processes and delve into the characteristics of contexts. They facilitate the in-depth investigation of a phenomenon in its real-life context. Specifically, a case study entails an in-depth investigation of a bounded case, defined as a single organization, scenario, or process (Merriam, 1998). With this design, the researcher is focused on the process rather than the outcomes, as the method allows the study of the phenomena in complex settings (Baxter & Jack, 2008)—a case-study method provides a specific focus and in-depth analysis of instructors' perspectives.

I chose a descriptive case study design for this research. A descriptive case study explores a phenomenon in a context by trying to understand contextual conditions and presenting its detailed description (Gerring, 2004; Yin, 2009). This study intends to get insights into how instructors in undergraduate online classes design courses with SA activities, how they

participate in those activities, and the challenges they face in implementing their courses. Designing and implementing a technology tool like SA and having learners participate in annotation activities is a complex, contextual process. The scope and depth of the design, pedagogy, and participatory processes must be distinct from the course context and be captured and described elaborately. A descriptive case study seeks a holistic approach and uses multiple forms of data to understand instructors' pedagogical choices, interactions, and behaviors. This study elaborates on the characteristics of individual teachers, the online classroom contexts and climate, classroom interactions, SA-specific interactions, and instructor participation. Through this, I hope to provide a detailed perspective on how instructors designed and implemented courses with SA, their activity, and interactions in the SA platform with learners, and their pedagogical choices throughout the course period.

## Study Design

I received the IRB approval for this study in November 2022 (see Appendix A). Obtaining this approval required detailing the purpose of the study, establishing the consent process, minimal risks, and confidentiality measures for instructors. As part of this process, I outlined the interview protocol and the incentive/compensation for the participants of this study.

### *Participant Selection*

For this study, I was interested in working with online instructors who teach undergraduate courses. I narrowed this group to focus on instructors who facilitated online courses with social annotation in the 2022-2023 academic year at one university. I used convenience and purposeful sampling to select participants for this study (Patton, 1990).

To locate possible study participants, I contacted instructional technology (IT) fellows in two separate humanities and social sciences schools to obtain details about instructors using SA.

I selected these two schools because I was an instructor in one of them and had knowledge that instructors in these two schools were using SA tools in their online courses. One IT fellow recommended me to the university vendor for the social annotation tool Hypothes.is. The vendor provided me with the details of 30 instructors currently (2022-2023 academic year) using the SA tool Hypothes.is in their online courses within the two schools. I contacted 20 instructors via email from the list (see Appendix B). I created selection criteria to identify participants for introductory, exploratory interviews.

- Instructors needed experience using SA activities in their online undergraduate courses within the last six months.
- Instructors should have previous experience teaching an undergraduate course online.
- Instructors must have experience using different technologies and tools in online learning.

Ten instructors responded positively to participating in the study. Two of them shared in their response to my email that they only used SA once over two years ago and would be happy to participate if required. I selected the other eight instructors who responded positively to introductory, exploratory interviews because they matched the selection criteria.

I scheduled an initial introductory interview with each of these eight instructors in January and February 2023. I conducted these exploratory interviews to explain the research study to participants and ask preliminary questions about their teaching and experiences with SA. I conducted these introductory interviews online via Zoom with all participants. After the interviews, I developed second selection criteria to refine and identify my focal participants for the study, where I would conduct one more round of in-depth interviews and member reflection:

- Instructors with different design and implementation strategies for using SA tools in their online courses.
    - The rationale for choosing instructors using different design and implementation strategies is to understand how these processes relate to their course learning objectives, design, and pedagogies. It was also vital to see how their design and pedagogies relate to using SA in the online class to enhance student learning.
    - Instructors should be able to articulate their reasons for choosing, designing, and implementing course activities with SA.

These selection criteria helped narrow my participants from eight to five instructors.

**Table 1**

Overview of introductory interview participants.

| **Potential Participant (pseudonyms)** | **Role** | **Reason for Exclusion in the Next Phase of Study** |
|---|---|---|
| Aspen | Teaching Professor | Included |
| Aurora | Professor | Included |
| Cedar | Graduate Instructor | Included |
| Clay | Graduate Instructor | Included |
| River | Graduate Instructor | Included |
| Participant X | Graduate Instructor | Only used SA in one course. Never participated in student annotations or responded to any of them and did not articulate the reason for using SA except that it helped with |

| | | |
|---|---|---|
| | | "active reading." The design was "annotate-reply" each week. |
| Participant Y | Senior Lecturer | Uses social annotation in a Spanish language learning course. Only one SA activity, reading and annotating a novel- did not elaborate on how SA helped student language learning or the reason for her design to annotate a Spanish language novel. |
| Participant Z | Lecturer | Uses social annotation for Russian language learning course. Did not articulate reasons for using SA except for mentioning how it helped students with non-fiction reading. The design included annotate-reply, and students never discuss or go back to annotations or questions or discuss language learning through annotations. |

***Participants***

I contacted the five focal participants to participate in a second round of interviews via email (see Appendix B). The five instructors included three graduate instructors, one full-time non-tenured teaching professor, and one tenured professor. I selected more graduate-student-level instructors for variability in their enthusiasm for working with and adapting various technologies like SA for student engagement. I chose senior faculty to understand their experiences transitioning to newer technologies like SA. These five instructors fit the rationale

and were enthusiastic and articulate in the initial interview about using SA in their online courses. All the focal participants have online teaching experience for at least five years.

Although they work for the same university, these instructors represent different and distinct content areas and have independent pedagogical strategies. They all have experience teaching synchronous and asynchronous online classes and have also taught a variety of class sizes. Notably, the online classes they discussed for this study were smaller (25 students or less). After participants confirmed their participation and continuation in the study, I set up a date and time on Zoom for in-depth interviews. I sent interview questions to all the participants one week before the interview and informed consent forms for them to sign and return to me. I provided the five focal instructors who participated in all the study phases with $50 gift cards for their time, energy, and insights.

**Table 2**

Focal Participants.

| **Instructor Name (pseudonym)** | **Teaching Experience** | **Course Modality** | **Interview Date** |
|---|---|---|---|
| River | 12 years | Online asynchronous | Introductory interview: 01/11/2023<br><br>In-depth interview: 03/14/2023 |
| Cedar | 5 years | Online asynchronous | Introductory interview: 01/12/2023<br><br>In-depth interview: 03/13/2023 |
| Clay | 5 years | Online synchronous | Introductory interview: 01/27/2023<br><br>In-depth interview: |

| | | | |
|---|---|---|---|
| | | | 03/13/2023 |
| Aspen | 11 | One section of synchronous and one section of asynchronous | Introductory interview: 01/27/2023<br><br>In-depth interview:03/17/2023 |
| Aurora | 16 | Online synchronous | Introductory interview: 02/01/2023<br><br>In-depth interview: 03/08/2023 |

***Social Annotation Tool (Hypothes.is)***

Hypothes.is (https://web.hypothes.is/) is an online social annotation tool used by all five focal instructors in this study. Hypothes.is allows users to annotate online text on websites, blogs, journals, and articles and create learning groups to share their text and resources. The website features include allowing users to annotate privately as a note-taking tool and collaboratively with others. It is open and accessible and integrates readings into the course LMS. Instructors and learners can also create a free account and start a private learning group within the tool if they keep their SA activities separate from the course LMS. Users must download a Chrome extension or a bookmarklet and highlight it before they start annotating. The tool also has tag features for users to tag their annotations to topics they are interested in, and the annotations with the same tags can be compiled together. While many other SA tools are available, the instructors chose Hypothes.is due to its features, ease of use, open source, and LMS integration.

**Data Collection**

I collected the data for this study between January and March 2023 and shared member reflection summaries with the focal instructors for their review during the summer of 2023 (see Table 3). The multiple data sources were grouped and utilized as primary or secondary sources.

***Primary Data Sources***

The primary data sources for this study included in-depth semi-structured interviews with five focal instructors, course syllabus, LMS and social annotation walk-through observation protocol, transcript annotations with jottings, and researcher analytic memos.

**Table 3**

Timeline of study.

| | **Timeline** | **Activity** |
|---|---|---|
| Pre-Data Collection | Summer 2022 | Pilot study with two graduate instructors<br><br>Refined interview questions and study design |
| | November 2022 | Thesis proposal meeting and approval |
| | November-December 2022 | Completed and submitted IRB, recruitment, consent forms, and emails- IRB approval |
| | December 2022 | Identified pool of participants, sent recruitment emails |
| | January- February 2023 | ● Introductory, exploratory interviews with eight participants<br>● Selected five focal participants for in-depth interviews<br>● Created research memos |

| | | |
|---|---|---|
| Simultaneous Data Collection + Analysis | | • Interviews transcribed<br>• Initial coding and analysis of interviews to develop questions for in-depth interviews |
| | March 2023 | • Second round in-depth interviews<br>• Interviews transcribed<br>• Created summaries of interviews for member reflections |
| | April- August 2023 | • Continued coding of interview data<br>• Compiled findings from LMS walk through protocol and research memos<br>• Sent summaries for member reflections<br>• Categories constructed from open codes through constant comparison<br>• Thematic analysis of categories conducted |
| Ongoing Analysis + Writing | March 2023- October 2023 | |

**In-depth Semi-Structured Interviews.** During the Summer of 2022, I conducted a pilot study with two graduate instructors with all the drafted interview questions for this study (introductory, second-round interview, and member reflection interview). The pilot interview was informal and conversational, where the instructors and I discussed the design of the qualitative study and each interview question. Both the instructors in the pilot provided suggestions to add/remove/rephrase/retain each question and recommended changes to the study

design. After the conversations, I reviewed and refined the interview questions (see Appendices C and D for final interview questions).

For this dissertation, the interviews (45-60 minutes each) with the five instructors were conducted in February and March 2023. The questions were based on the protocol I developed and refined during the pilot. The interviews focused on how and why instructors used SA in their courses, their experiences and perspectives on SA, and their participation in SA activities. Follow-up questions included asking them how they view their design, implementation, and presence in the course. I also asked them to elaborate on the processes behind establishing and sustaining their participation and presence in the course.

All five focal instructors participated in the initial introductory exploratory interviews to inform participant selection. The relevant content from those interviews was included in the data analysis. All the interviews were conducted online via Zoom and recorded there, as Zoom provided automatic transcripts for the interviews, which were cleaned and revisited multiple times during the analysis.

**Course LMS and Syllabus.** During both introductory and semi-structured interviews, I asked instructors to select and talk about a specific online undergraduate course they had taught in the past six months where they used SA. The reason behind giving the instructors a choice was to understand the faculty's perspective and to provide them with the comfort and flexibility to discuss their experiences. Offering this choice to the instructors helped them explain their reasons for using SA in that class. Instructors also shared the course syllabus and walked me through the course LMS during the Zoom interviews instead of providing me direct access to the LMS. This decision ensured the level of comfort continued with the instructor and for me as a researcher to get a sense of the course structure and climate from the instructor's perspective.

**Social Annotation Activity Compilation.** During the introductory exploratory interview and the in-depth interviews, I asked all the interviewees to share their screens and show some activities they designed and implemented using the SA tool Hypothes.is for the class. Three instructors used the Canvas LMS integration feature with the tool to create SA activities for students. Two instructors created private class groups within the Hypothes.is for students to annotate specific course articles. During the interviews, I asked instructors to explain how they designed and implemented the activities, their chosen course articles, their pedagogy, participation, and how they facilitated student interaction in the SA platform. I made notes using the observation protocol I developed (see Appendix F) and my research memos. Some SA activities and designs were revisited during the in-depth interviews with focal instructors, where I asked follow-up questions on their design and pedagogical choices.

**Interview Transcripts, Recordings, and Archives.** All the interview transcripts and recordings (video and audio on Zoom, audio backup on the recorder app) were downloaded and cleaned manually. I watched and rewatched the video recordings and cleaned the transcripts line by line in Google Docs. I also fine-tuned transcripts using archived recordings for pauses, emphases, and any additional details like facial expressions and gestures.

**Researcher Memos and Jottings**. I kept a journal to add my memos and jottings to add my thoughts and perspectives on the data. This includes my jottings during interviews with each participant, post-interview thoughts, emerging questions, categories and themes from instructor interviews, and my analysis processes. These memos helped me reflect on what I missed during interviews with participants, any prejudices or biases, notes about what interested me, and aspects to focus on.

***Secondary Data Sources***

Secondary data sources for this dissertation included introductory exploratory interviews with eight instructors conducted during early spring 2023, out of which the five focal participants were selected.

**Introductory Exploratory Instructor Interviews.** These exploratory interviews included discussing a brief description of the study with the instructors, explaining the purpose and goals of the study, providing space and time for instructors to ask questions (part of the consent process), and establishing a rapport. I also asked them preliminary questions about their experiences and pedagogies as online instructors and SA (see Appendix C). These conversations provided context for the requirements and analysis of the study.

**Member Reflections.** After analyzing the five focal participants' interview transcripts, I sent summarized versions to these instructors in the summer of 2023. These were conducted as a form of member reflections, as recommended by Tracy (2010). Member reflections are done to take “findings back to the field and determine whether the participants recognize them as true or accurate” (Lindlof & Taylor, 2002, p. 242). Tracy (2010) also shared that member reflections allow collaboration and help understand if the participants find research meaningful as they reflect, react, or find problems with the research. This process also provides another option for additional data that adds to the credibility of the research. I sent the participants summaries (the interview transcripts were long and detailed) because shorter, summarized themes and categories were more respectful of their time. Composing them was also part of my analysis process. I asked instructors to provide feedback to check for accuracy in my coding and analysis. I used their feedback to reflect on my initial round of analysis and check for accuracy. I used this data in the next round of analysis to refine and triangulate my findings.

**Data Analysis Process**

Merriam (1998) defines data analysis as making sense of data. Moreover, making sense of data involves "consolidating, reducing and interpreting what people have said and what the researcher has seen and read - it is the process of meaning-making" (Merriam, 1998, p.178) and discusses simultaneous data collection and analysis as an essential attribute of qualitative studies. While the guidelines are elaborate, she leaves autonomy for the researcher's perspective on analysis and writing. Following Merriam's (1998) guidelines, this study's analysis began with data collection in spring 2023. I asked the same questions to all eight participants in the exploratory interview. For the five focal participants, I started with the list of questions I wanted to ask everyone. Also, I developed some questions more directed to their specific teaching contexts (see Appendix D for in-depth interview questions). I asked each instructor impromptu follow-up questions based on their responses to other questions. I spaced each interview to give myself the time for jottings, memos, and initial reflections. This was also done to inform the data collection and analysis process together, as Merriam (1998) indicated. I cleaned each transcript immediately after the interview when the interview was fresh in my mind. I used the automated transcript provided by Zoom and the video and audio recordings to clean any words or phrases that had not been transcribed correctly. I used a qualitative data analysis process called constant comparative analysis to analyze the interview data (Harry et al., 2005). This process includes coding the interviews with open codes, categorizing them into groups, organizing the categories into themes, and explaining how the themes address the study's research questions (Harry et al., 2005). I elaborate on my analysis processes in the sections below.

***Qualitative Open Coding Analysis***.

I began my qualitative open coding analysis by reading and tagging sections of instructor interviews with words or phrases that explain what the instructors are talking about (Harry et al.,

2005; Strauss & Corbin, 1998). I coded each transcript manually and developed inductive, open codes for each interview. Table 4 outlines a few excerpts from the instructor interviews and the initial open codes I gave them.

**Table 4**

Example instructor interview excerpts and open codes.

| **Excerpts from the instructors' interviews** | **Open Codes:** |
|---|---|
| "There is nothing less authentic than a discussion board post, and everybody knows it. You could do many things in class, but social annotation is a nice way to ask people to pull out a chunk of reading and talk about it in class." [Aspen, 2nd interview] | Inauthentic discussion boards; social annotation for better class discussion. |
| "You have different perspectives when you see people with different perspectives. When you see how people rationalize their viewpoints, you think critically about your thoughts and ideas." [River, 2nd interview] | Brings out different student perspectives; critical thinking in students |
| "What we do when we socially annotate is, we are communicating a meaning that we are seeing across a text together." [Clay, 2nd interview] | Communication; relational; meaning making |

### *Compiling Categories*

After open coding all the interviews with the five participants, I categorized the open codes depending on how they related or belonged to larger categories. I compiled groups of open codes together and created categories for each group. I did all this manually using sticky notes to see which groups of codes belonged together. This process helped me understand how to group and regroup different open codes, how and why I labeled them together, and how they informed the processes of different participants. After this, I labeled all the categories for each group (see Table 5).

**Table 5**

Sample open codes and categories.

| **Open codes** | **Categories** |
|---|---|
| Student perspectives are coming out; students think critically. | Visible student perspectives and thinking. |
| Inauthentic discussion boards; I do not like discussion boards; SA is anchored, unlike discussion boards. | The inauthenticity of discussion boards. |
| Reading as a social practice; building an online community; social connection with peers. | Building a learning community through SA. |

### *Thematic Analysis*

The next step in the coding and analysis processes included comparing the categories I compiled with each other to understand how they relate. Harry et al. (2005) called this thematic analysis because they captured the summary of what instructors said within these codes. I used sticky notes on a large poster to merge categories into themes and color-coded open codes to group them into categories and themes. I also supported this process by cutting up instructor interviews and placing them next to different codes and categories to ensure they are connected. I curated each theme by going back to the interviews, comparing them with the syllabus and social annotation walk-through protocol to ensure they captured specific components and how they informed each other. I initially gathered eight themes, which I reviewed and condensed again to five themes that addressed all three research questions. Table 6 provides an example of themes and categories.

**Table 6**

Sample Themes and Categories.

| **Theme** | **Category** |
|---|---|

| | |
|---|---|
| Authentic conversations and a learning community in an online course are important. | Designing for authentic online conversations; building a learner community in an online learning environment. |
| Student engagement and participation in SA goes beyond "Annotate and Reply." | Using guiding prompts and questions, connecting social annotation with other tools. |

**My Researcher Positionality and Lens**

One of the first jobs I had in education was with a quantitative researcher years ago. While he was a brilliant statistician and taught me so much, I wanted to be able to go beyond averages and outliers. As I progressed in educational research and started exploring other methods and methodologies, I had to learn and unlearn new languages in educational research. One of the common things that I kept referring to from quantitative life was the word "sample." My advisor commented on one of my proposals, "Change it to participants, not sample – humanize them." And that was when the importance of my research hit me. As researchers put it (Akkerman & Meijer, 2011; Roth, 2018), educational research is about humans, the people behind the averages and outliers, people whom we study and learn about, and how they have a presence, relation with us as researchers, as they share parts of their lives.

The excerpt above explains why qualitative researchers emphasize and reiterate, powerfully and often, that the researcher "is the primary instrument for data collection and analysis" (Merriam & Tisdell, 2016, p. 16), explaining that researchers bring advantages and shortcomings to the study. Through the intersection of my many scholarly identities, I brought much of myself into the study, impacting how I designed and conducted this study. My experiences as a learner, beliefs as an instructor, values, and reflexive processes as a researcher helped me reflect and remind myself how they shape my research. I also brought much of myself

and the research into the writing process, documented and presented my perspectives, and how they influenced the study.

I keep telling everyone who lends me an ear about my absolute love for collaborative learning. I grew up keeping my questions and answers to myself, wanting to ask a peer more about their ideas and enjoying the work of creating something as a group. As a learner, I have been on both sides, enthusiastically participating in a discussion to silently lurking and noting everything. As a researcher, I have seen “aha” moments that technology and collaborative learning brought to student learning experiences, instructors' beliefs, and practices visible in their pedagogies and lesson plans, and even institutional change and support to address the needs for online learning and technology integration.

As an online instructor in a university setting who uses many educational tools and technologies, including social annotation, to support and enhance student learning, I am a strong proponent of the social and collaborative aspects of learning. When I started exploring SA both as a learner and an instructor, there was a need for more resources on designing and implementing online courses with social annotation tools and engaging undergraduates in rich, participatory experiences. It took me a while to understand my design, pedagogy, and challenges to navigate the SA space and work with learners of varying interests and motivation levels. Even as I continue to read through many research papers on social annotation in online higher education settings, they focus on student use and perspectives about different tools and seldom on instructors. I had the opportunity to discuss more about social annotation tools with a cohort of instructors in my program who were using SA in their courses and had similar issues with design and implementation. During the discussions with my colleagues, I understood the need to

focus on instructors' experiences with social annotation, design processes, challenges, and the need for support.

I also realized that I was never alone in this process - I had to learn and unlearn many things, but that was only possible because of the guidance, support, and scaffolding from colleagues, supervisors, and peers. This “social” journey continues to shape my learning and research trajectory and contributes to my passion for collaborative learning and annotation. As exciting as this fiery passion was, it had to be nurtured with the right amount of wood and fuel during this study.

Before the study, I spent much time reading the literature on the topic, understanding where the gaps existed and what to focus on in my study. I winnowed down many questions during this process to choose the aspects I wanted to get insight into. I developed interview questions based on my experiences as both a learner and instructor using social annotation tools. I piloted my initial interview questions with two colleagues and refined them based on their suggestions. I channeled my instructor identity into this study's facilitator and listener role. While I was so excited to say, “Yes! I went through something similar,” or more, I focused on learning and understanding the experiences and perspectives of instructors. I was conscious of the thoughts that ran through my mind during the interview and jotted them down in my notes - about what the instructors shared, their emotional and physical cues, their walk-throughs of the course LMS, and the SA tool. I constantly referred to my course and SA walk-through protocol (see Appendix F) to ensure my focus remained on the instructor's use of social annotation tools, their design, and pedagogical strategies, and how they related to the course learning objectives. I also developed questions specific to each participant, teaching and learning contexts, and experiences. I was mindful of keeping my thoughts and perspectives to a minimum during the

interviews and established trust and rapport with participants to allow them to express themselves openly.

Despite my efforts to reach a wide variety of participants within the university, I had three participants who had been my colleagues for a few years before this study. With all three of them, I had to be conscious of how our relationship may influence my analyses and interpretations. The shared interest in embedding social annotation tools in online learning was one reason that brought us into a learning community together, and I cherished that with each of them during the interview. These prior relationships have also helped me fill some gaps in my questions for the participants and keep me aware of my biases.

I conducted all interviews online and cleaned automated transcripts provided by Zoom, which I read, proofread, and updated with notes, annotations, tones, and gestures. Through each part of the study, my annotations through notes and memos helped me reflect on the different stages of my research process. The data analysis process involved multiple steps of going back and forth with the data to understand what participants said and how they related to my notes and memos.

As a researcher, I was also prepared to pay attention to specific points that were not part of my questions but were sometimes relevant to be added to the research as they shaped the participants' experiences and were sometimes perhaps tangential to the topic. I understood the need for constant reiteration of the researcher being the primary instrument. You need to be aware. You need to be mindful. Most importantly, you need to be human and be one with your research.

**Trustworthiness in Qualitative Research**

Merriam (1998) states how a case study depends on the investigator's integrity and bias and how one has to rely on one's instincts and abilities throughout the research. Following this, it was essential to be aware of my subjectivity and personal biases and design the study accordingly. For example, I used purposeful sampling based on a set of identifying data and used multiple data sources to triangulate the findings. I also used detailed field notes, observation protocols, and personal memos for each interview and SA activity to be aware of my personal biases and to be able to balance the subjectivity and interpretation of the data. I was also guided by Tracy's (2010) inclusive eight-point model and criteria for a high-quality qualitative research approach for rigor and trustworthiness: a worthy topic, rich rigor, sincerity, credibility, resonance, significance contribution, ethics, and meaningful coherence. Three criteria from Tracy's model were essential in helping me ensure my research quality and understand the nuances and differences of this proposed study.

### *Establishing Rigor*

Weick (2007), as cited in Tracy (2010), explained that high-quality qualitative research should include generous, bountiful descriptions of data generated through various theoretical constructs, data sources, samples, and contexts. Golafshani (2003) added that qualitative research should include enough data supporting the study's goals, such as field notes, interviews, and analysis procedures. They also noted that rich and rigorous qualitative data prepares a researcher to see nuance and complexity in the data and make effective choices about analysis processes. These details about the data and the analysis processes are considered essential for researchers to provide significant claims.

I used all these procedures to help establish rigor in this qualitative study. I established rigor by collecting different data types through interviews, course and annotation activity walk-

throughs, and member reflections. Open inductive coding strategies (Harry et al., 2005) were used for the data analysis process to understand different themes that come up during the coding and analysis process.

### *Sincerity*

Tracy (2010) explained that sincerity in qualitative research is established through self-reflexivity and transparency. Self-reflexivity is achieved by being introspective, understanding and assessing biases and motivations, and questioning how they are suited to study the topic. As a researcher, I understand that my perspectives, biases, and positionality influenced the study's processes. Throughout this case study, I made space and commitment for self-reflexivity by being introspective and aware of my biases in my research memos. I used these memos through the analysis process.

Tracy (2010) explains that transparency is another way of achieving sincerity in qualitative research. Transparency is being honest about the research process by providing detailed auditing accounts (Seale, 1999). Qualitative research is an intense and subjective process, and my perceptions inform the study and its implications. I am transparent about the research process by providing an audit trail (Seale, 1999). My research memos and notes comprise my audit trail, including elaborate documentation of the research processes, activities, and study decisions. These documents are included in the Appendix (C, D, E, and F) recommended by Creswell and Miller (2000). Along with this detailed methodology chapter, my audit trail provides insight into the study's context, participants, field notes, transcribing process, the study's challenges, and limitations, and how they changed during the timeline.

### *Credibility*

Credibility is the “trustworthiness, verisimilitude, and plausibility of research findings” (Tracy, 2010; p.842). Tracy (2010) elaborates that credibility is achieved through the thick description and detail of knowledge, triangulation, and member reflections and that the interpretive analyses should be plausible and persuasive. Geertz (1973) and Bochner (2000), as cited in Tracy (2010), explain the need for thick descriptions to account for the complex specificity and circumstantiality of the data. Researchers should provide enough details for the readers to form their interpretations. This detail is also necessary for researchers to have tacit knowledge (Altheide & Johnson, 1994) that goes beyond surface-level speech, text, or discourse.

For this study, I used the words and direct quotes of the participants in many places to provide descriptions and details, so their words are not taken out of context. I also relied heavily on cleaning up and understanding the interview transcripts to capture better the participants' responses, cues, and emotions. I tried to complete cleaning the transcripts on the same day of the interview and used the video recordings on Zoom with the transcripts to rewatch and edit the transcripts. I also cleaned up the transcripts by removing speech fillers like “like,” “umm”s, and “ah”s to clarify the meaning of the participants better.

Tracy (2010) also discusses triangulation in research as a form of credibility using multiple methods, resources, or frameworks. Triangulation in qualitative research assumes that multiple data sources, theoretical frameworks, or data types come to the same conclusion, which is more credible (Denzin, 1978). Researchers also indicate that, while triangulation does not often indicate improved accuracy, it often helps increase scope, deepens understanding, and encourages consistent interpretation.

I have included multiple data sources to establish credibility through triangulation. I interviewed five online instructors with varying teaching expertise levels as my primary data

source. I also used their course syllabus, LMS, and social annotation activity walk-through to understand their course context and SA design. I used secondary data sources through non-focal, introductory interviews from 8 purposefully sampled participants. They provided context on the instructor's use of social annotation, how and what I need to focus on for my focal participants, and different design and implementation strategies.

**Chapter Summary**

For this dissertation, I used a qualitative, descriptive case study approach and social constructivist and sociocultural perspectives as my theoretical frameworks to explore instructors' perspectives using social annotation tools in their online courses. I conducted introductory interviews with eight online undergraduate instructors and purposefully chose five of them as my focal participants. These five instructors participated in a second in-depth interview and shared their course syllabi and design formats. Using a deductive, open coding approach and a constant comparative method, I analyzed the interview transcripts to compile themes across all the participants to answer the three research questions.

The following two chapters share the findings of my analysis, highlighting the similarities and differences between instructors using social annotation tools in their undergraduate online courses and the efforts, design, and pedagogical changes they made to transition and integrate social annotation in these courses. Chapter 4 discusses the online course designs, implementation, and pedagogies used by the five instructors teaching synchronous and asynchronous courses. Chapter 5 discusses the common themes from a comparative, thematic analysis of instructor interviews that also address the research questions and how they support and add to existing literature.

# CHAPTER 4: DESCRIPTION OF COURSE DESIGNS WITH SOCIAL ANNOTATION

Online learning environments are designed in different ways: asynchronous, synchronous, and blended (Martin et al., 2020). An *asynchronous* online learning environment does not require the instructor and students to meet at a set time, and learning is facilitated via emails, video lectures, and discussions using various learning technologies (Viriya, 2022). In this modality, students have time to think and plan their learning as there is flexibility in the design and affordance to set their learning pace (Chen & Liu, 2020; Coogle & Floyd, 2015). A *synchronous* online learning environment includes real-time communication and interaction between instructors and learners through video conferencing, chats, or discussion boards (Moallem, 2015). It is designed to minimize the distance in online learning and focuses on student engagement. This modality provides the affordance of real-time knowledge construction and sharing, along with having discussions and getting questions answered by the instructor (Skylar, 2009). Social annotation is widely used in synchronous and asynchronous learning environments. It provides a more dynamic, anchored, and structured discussion related to the course text and as a pre-class reading activity (Croft & Brown, 2020; Miller et al., 2018).

This chapter describes the course designs of all the five focal instructors who taught online undergraduate courses. Two instructors (River and Cedar) taught *asynchronous* courses, and the other three (Aspen, Aurora, and Clay) taught *synchronous* online courses. Their design, implementation, pedagogies, and challenges with the SA tool, Hypothes.is, are detailed in this chapter to illustrate how social annotation tools inform learning objectives, processes, and outcomes. The chapter does not highlight one design or pedagogy but instead richly describes the perspectives, experiences, and challenges as instructors themselves view them. It begins with the two instructors who taught *asynchronous* courses, River and Cedar.

**Participant #1: River (She/ Her)**

River is a doctoral candidate and graduate instructor in the education program. She taught English for eight years in her home country before joining the doctoral program and has been teaching for the doctoral program for four years. To date, she has taught multiple online courses about technology to undergraduate students. She is interested in online collaborative learning, understanding how students use technology, and using learning analytics to inform the learning designs of instructors. River discussed that her pedagogy mainly focuses on social constructivist principles, where she facilitates the interaction between learners so they can construct knowledge together. She designs learning activities to include negotiation, discussion, and meaning making among learners. She enjoys teaching online and designing activities that include students working together and sharing perspectives. During the introductory interview, she discussed her teaching philosophy. She said that she believes learners are active agents of learning and they can construct knowledge based on context, negotiation, and interaction with learning environments.

*I like to let students lead the conversations by themselves and co-construct knowledge together, and as a teacher, I am more like a facilitator. My designs also shift based on the student feedback and perceptions of the content towards the design.* [Interview 1, January 11, 2023]

River's asynchronous online course design focuses on online discussions where students negotiate, share perspectives, and reflect on them. Students are at the center of her design and implementation processes, and their opinions on learning materials are significant to her reiteration processes; *"*The interaction between students, their exchange of ideas, and negotiation is based on the idea that they can construct knowledge together. So, they have more interpretations and help each other better understand the concepts*"* [Interview 1, January 11, 2023]. During the interviews, River also talked about teaching undergraduate students and the heterogeneity in student motivation for online courses. While some students take courses for credit, others are interested in learning from and with their peers.

***Discussing Social Annotation***

River learned about social annotation tools as a doctoral student when she used Hypothes.is in one of the online courses she took for her degree. She found them powerful and valuable, particularly asynchronous online courses, where learners can share and discuss ideas based on the course text. She mentioned that Hypothes.is has exciting features like private class groups, LMS integration, tags, open-access, and easy and intuitive navigation. She initially started using the tool as a student and for her reading, and then she began using it in the courses she teaches. She observed that SA built a learning community in her online class, and students' critical thinking was evident in their discussions. She especially found using SA tools to be effective during the COVID-19 pandemic, when courses shifted online, and there was an

increased need to connect better with students; “Students liked it, especially during the COVID-19 pandemic…Students needed that because they felt more connected with their peers” [Interview 1, January 11, 2023].

### *Designing with Social Annotation*

I asked River to discuss how she designed her online asynchronous course with the SA tool Hypothes.is and how she saw the course's learning objectives aligning with SA (see Figures 1 and 2). River began talking about the learning theories she draws from, including social constructivism and her belief that the interaction between students, their ideas, and content is vital for knowledge construction. Using SA, students can negotiate and help each other understand course content better and share different perspectives they bring in. This also helps create a learning community in a class, and she centers her course design around it.

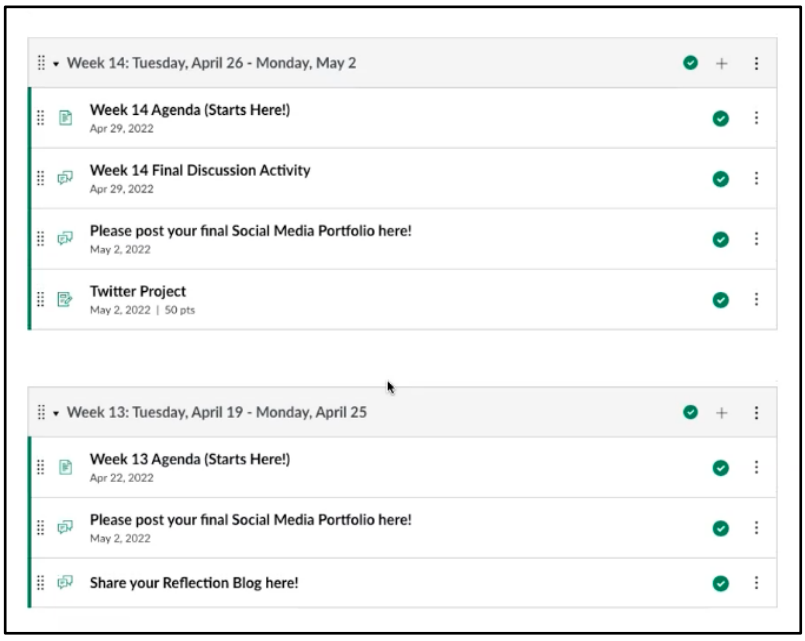



*Figure 1*. Excerpt of River’s Canvas LMS course design.

River talked about one specific online asynchronous course that discusses the relevance of social media in adults' personal and professional lives. It is a 14-week, completely online,

asynchronous course for undergraduate students with an average class size of 20. River creates private course groups on the Hypothes.is for students to join the class group, activate the Chrome or Safari browser plugin, and annotate the articles. The primary learning objectives of the course are providing students with a deeper understanding of social media and how it affects their lives, thinking and reflecting critically about social media, and building an online learning community.

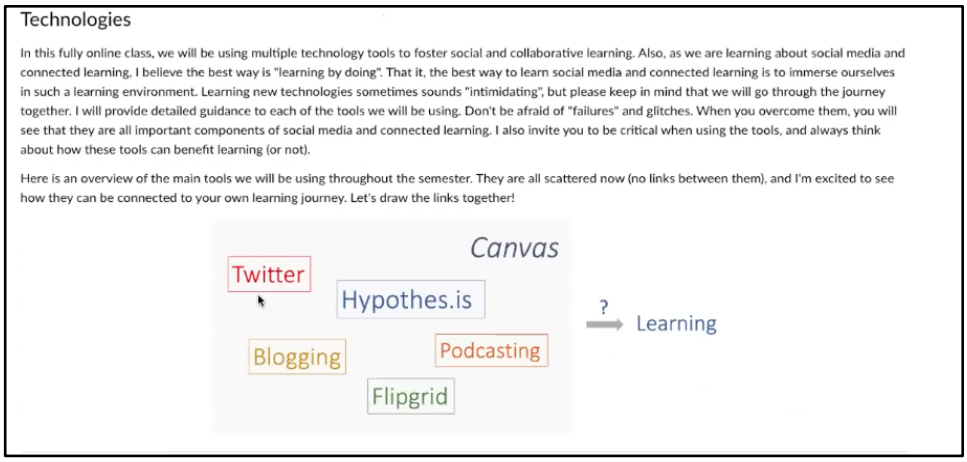



*Figure 2*. River's course design to connect different technologies.

During the second interview, Rivers shared that "in the asynchronous setting, when you assign readings for the students, you do not know what they are thinking. Social annotation provides a platform for students to discuss specific viewpoints, the sentences, or text that interests them" [Interview 2, March 14, 2023]. She elaborated that social annotation also helps students see different perspectives, relate them to real-life experiences, and use them to guide their thinking. River shared that students also cite their peers' annotations in their writing reflections, helping them view and understand the different perspectives they bring to the course. She added that social annotation allows her to see students' rationale with different viewpoints, think critically about something they missed, and how that topic supports their thinking about a course topic. River reflected,

*This does not happen in a discussion board because people make long posts. They focus more on their thinking. There are some replies also, but they do not go very deep. It is usually a very general thought on the whole topic.* [Interview 2, March 14, 2023]

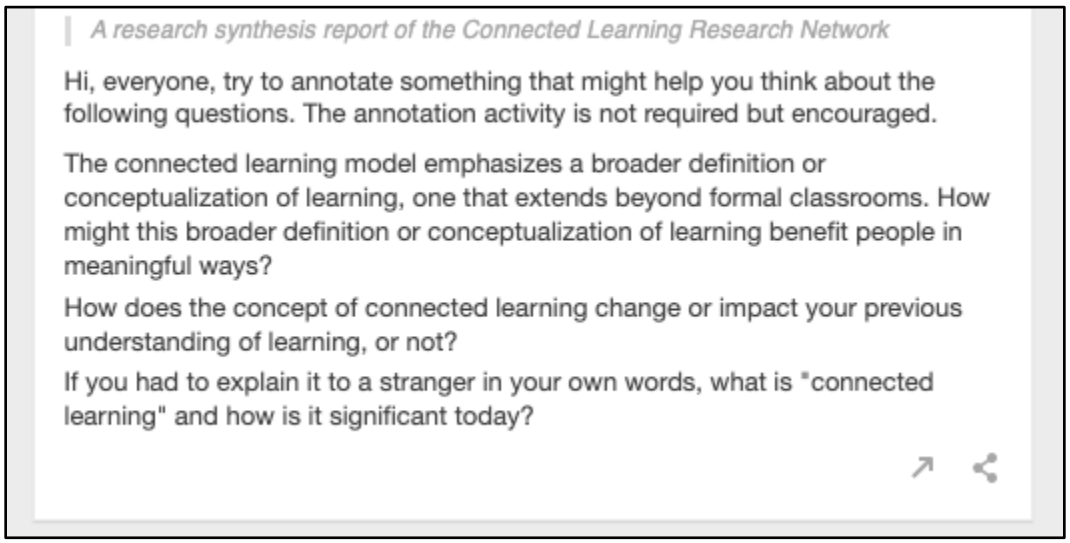



*Figure 3.* Prompt questions provided by River for her online asynchronous class.

Students in River's online asynchronous course read and annotate course articles every week (see Figure 3). She asks students to make two individual annotations highlighting specific parts of the course text and respond to at least two annotations made by their peers. She asks students to make the two annotations by Friday and respond to peers by Monday. She creates staggered deadlines for individual annotations and responds to peers so students can review others' annotations and replies (see Figure 4).

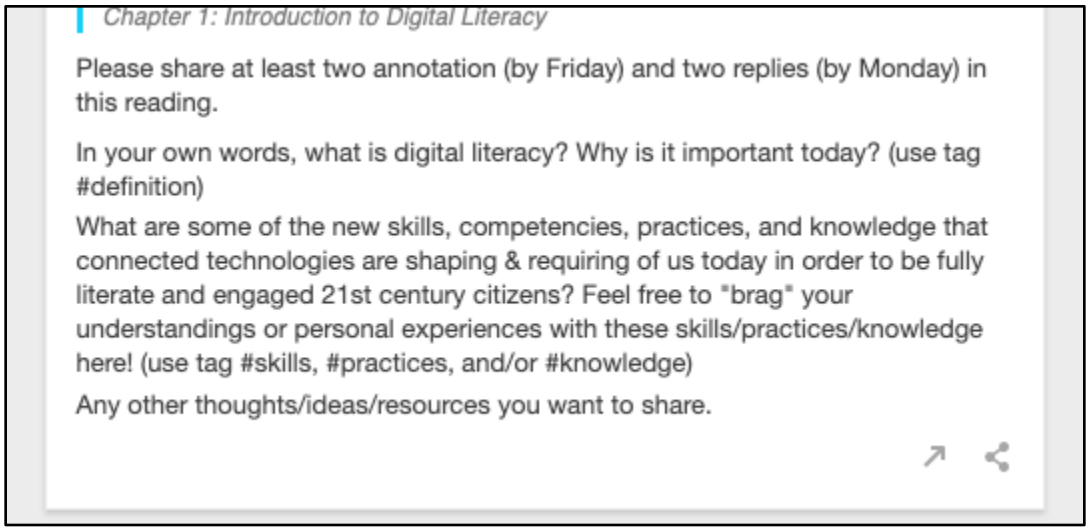



*Figure 4.* Staggered deadlines and prompt questions provided by River.

She provides prompt questions for students to focus on and encourages them to use the tag feature on Hypothes.is for specific topics and her name for their questions (see Figure 3). Students also complete an individual summative reflection activity at the end of the week. River encourages students to cite annotations of themselves or their peers in the reflection activity to boost their points. She shares exciting student annotations on Twitter, provides summaries of weekly annotations, and encourages students to share peers' annotations on Twitter to continue discussions on the topics.

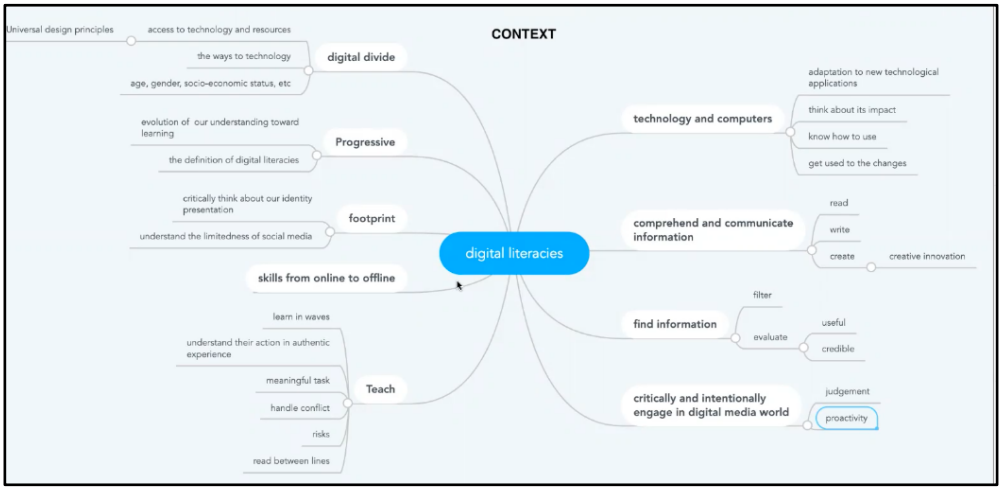


*Figure 5.* River's summary of student annotations as a concept map.

***Instructor's Role in Facilitating and Participating in Student Annotation Activities***

River discussed that one of her prominent roles in the course is guiding student conversations on Hypothes.is. She also sometimes takes on the role of a synthesizer, moving the student conversations forward and showing their thinking:

> *There are two types of annotations [that I make]. Sometimes, I jump in early. I answer their questions, respond to one or two students, and guide the conversation. The second role I take is that of a synthesizer. After students complete their annotations, I summarize their perspectives. That is why we use tags.* [Interview 2, March 14, 2023]

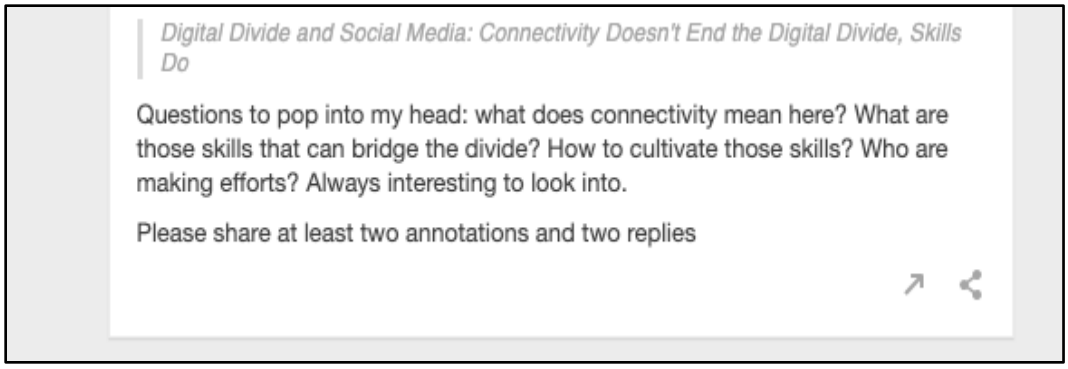



*Figure 6.* An example of River's response to a student annotation.

She elaborated that she compiles student perspectives from their tags, creates concept maps and summaries (See Figure 5), and shares them with students on Twitter or via email. She also added that she responds sparingly to student annotations because it removes their autonomy and space (see Figure 6).

> *The best role instructors can take is to be a facilitator, propose questions from the students' annotations, and ask them to think more. The frequency with which the instructor is involved and what we post there can push the conversation. The time and type of instructor annotations are essential.* [Interview 2, March 14, 2023]

### *Bringing Students Back to Annotations*

River is often worried about one design aspect with SA – students annotate, respond to one or two peers, and then never come back to see what everyone else shared. River contemplated,

> *I think it is a challenge to get everyone to talk more about each other's annotations. It is probably necessary to have a synchronous or online meeting with everyone to discuss annotations and how they could apply their learning to their writing. I am thinking about how to use annotation text as in-class material. It is still a challenge.* [Interview 2, March 14, 2023]

River shared that some of her students annotate early in the week and get replies from their peers. Some other students, despite sharing engaging perspectives later in the week, only sometimes get as many responses from their peers. River also added that she often encourages students to cite annotations and responses in individual writing reflections. She noticed that her students cited their peers' annotations in other assignments and shared how those discussions changed their perspectives.

### *Assessment and Feedback*

River shared that she grades student annotation activities for completion. Although she does not have a formal rubric, she encourages students to give reasons in their annotations and explain why the excerpt is interesting or relevant to them in some way. She also uses an analytics tool called "Chromewell" that counts student annotations and responses as a completion checkpoint. She added that students must respond to their peers to get total credit points; "They need to converse with others, or we only share our ideas. That is not the goal of using social annotation in this course" [Interview 2, March 14, 2023]. River goes on to explain that

A *good annotation has reasons. I want to understand what they [students] are thinking, whether they have a rationale or give reasons for their perspectives. Moreover, while replying to others, say why you agree or disagree with the person. Do not simply paraphrase what your peers are saying. Even if it is a disagreement, it is a good annotation, and you explain why.* [Interview 2, March 14, 2023]

River contacts students individually via email to help them if they need help participating in social annotation activities. She shared that students sometimes need help finding the right class group or falling behind in course activities. She helps them individually and provides feedback and flexibility to catch up with the work.

***Challenges***

River discussed some student-related challenges she faced while using Hypothes.is. First, she mentioned how students sometimes post in the wrong group, and it takes more time for her to find their posts and redirect them to the right places. She also noted that getting students "continuously engaged in the discussions is difficult. The problem is that I think they all jump into the annotation and annotate very early. For those students, people reply" (Interview 2, March 14, 2023).

*Figure 7*. An example of one of River's tags on Hypothes.is to encourage students to tag similar annotations with the same tag (#definition).

Also, everyone does not respond to each other, but she continues to think about scaffolding, so they stay encouraged about participating in the SA activities. Finally, River identified another challenge in using SA: students need to use the tag features in the Hypothes.is often, despite her encouraging them to do so (see Figure 7).

**Participant #2: Cedar (He/Him)**

Cedar is a doctoral candidate and graduate instructor in River's education program. He has taught online, asynchronous courses at his current university for three years, including before and during the pandemic. He teaches an online course on ethics and technology for undergraduate business students. Cedar discussed that his course design and pedagogy mainly focus on collaborative knowledge building and designing for engaging and real-life applications with the content.

Cedar is interested in using new tools and opportunities for students in his online asynchronous course to collaborate and work together. He discussed that his course designs emphasize practical and relevant topics to students' personal and professional lives and focus on students taking agency and leadership and sharing things relevant to them. Cedar also talked about the heterogeneity in undergraduate student motivation and the need for more scaffolding from the instructor in an online environment. He also reflected on his experiences as an undergraduate student and his lack of online learning opportunities. In his introductory interview, he shared that online learning is new territory for both students and instructors, and engagement is the most critical and difficult thing to address; he says, "It is a new context for learning, and it is reading heavy, dense articles online. Making it more relevant and interesting to them by

having them relate [topics] to their own life is useful" [Interview 1, January 12, 2023]. He added that engaging students is one of his primary goals for his class, along with providing the required structure and scaffolding in online courses.

***Discussing Social Annotation***

Cedar learned about the social annotation tool, Hypothes.is, in an online course that he took as a doctoral student. He found that SA was a very engaging way of reading and discussing course texts, so he began using it in his undergraduate courses as an instructor. In his first interview, he said,

> *It was a really engaging way of reading an article to highlight and annotate various interesting things. And having other people jump in and say their opinions and how they could develop the idea further on that level."* [Interview 1, January 12, 2023]

He wanted to integrate social annotation into the course to support collaborative knowledge construction in students. He shared that using a tool like Hypothes.is more engaging than Canvas discussion boards and aligns better with his teaching interests. His use of SA focuses on organic discussions about a course topic. Cedar reflected that SA is more formative when students develop perspectives about a topic and do not take away momentum and context from what students bring up to discuss.

***Designing with Social Annotation***

Cedar discussed his design and implementation approaches for the ethics course and how he uses the SA tool Hypothes.is to align the learning objectives. His design is structured around student agency, setting learning goals, and having students reflect on their learning processes throughout the semester. He wants students to contextualize their learning interests with the course topics and create artifacts that reflect their approach. He says, "Students come in with

varying experiences related to the subject. They need different levels of scaffolding. Some students need more nudging than others, and I check in and work with them to understand their interests" [Interview 1, January 12, 2023]. He added that he wants students to interact with each other and share ideas and perspectives.

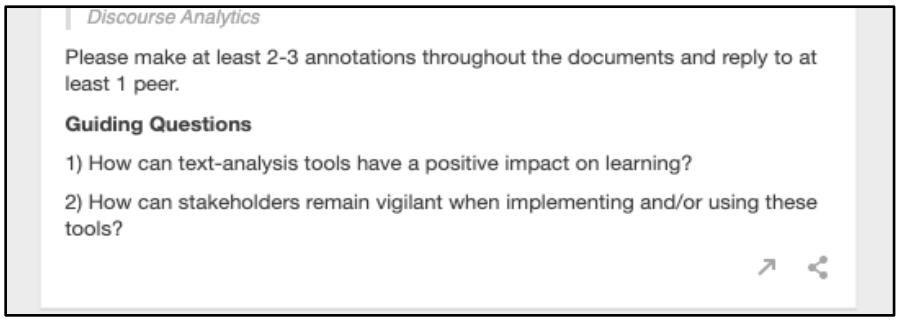



*Figure 8.* An example of Cedar's guiding prompts on Hypothes.is

During the in-depth interview, Cedar talked about his course learning objectives and how they relate to his use of SA. His course is writing intensive, and students do much of their writing through SA discussions as they share and challenge each other's beliefs about course topics; "Students have ideas about the ethical use of technology, and you need them to interact with their peers and challenge their beliefs. Having them read and reply to each other, and disagree even, to challenge preconceptions" [Interview 2, March 13, 2023]. He also added that another objective is to connect course topics to real life and make connections as a learning community.

Cedar shared that social annotation provides the affordance of situating learning in the context of the topic that a discussion board does not have; "when annotating an article, you are picking out and highlighting passages and discussing in a way different from [discussion boards]" [Interview 2, March 13, 2023]. His class does social annotation activities on Hypothes.is every week. He does not use the Canvas integration but has a private course group where students annotate articles as a whole class. He asks students to read the article once and

choose excerpts they find interesting, significant, and worth commenting on. He also asks students to find aspects that they found personally relevant.

> *Once they do that [make individual annotations], I ask students to go through and find an annotation that they agree or disagree with. I want to ensure that everybody gets at least one reply and at least replies to another person*. [Interview 2, March 13, 2023]

Cedar added that he would like to go beyond the annotation and reply design and have students do more, but he does not want to increase student workload (see Figure 9). He has staggered deadlines for posting individual annotations and responding to peers during the week. His weekly design primarily focuses on striking a balance between consistency and variety. In his introductory interview, he explained that students like the course design to be consistent each week and don't want to download a new application or tool and learn about it. However, it is also important to have variety in course activities by keeping the design consistent, so students are engaged. He added

> *It is about striking a balance between the two things. Introducing much complexity to have them download different things creates a scattered experience. I have soft and staggered deadlines during the week and house most things on Canvas. Having a structure like this helps.* [Interview 1, January 12, 2023]


*Figure 9*. Cedar's requirements for student annotations and responses.

***Instructor's Role in Facilitating and Participating in Student Annotation Activities***

Cedar reiterated the need for providing more scaffolding as an instructor in an online undergraduate course and achieving a balance between designing for student engagement and workload. He shared that he provides a few guiding prompts for students' annotations but does not respond to their discussions as much as he likes to. He occasionally answers student questions or comments on an interesting annotation but leaves the annotations open for student discussion. He reaches out to students individually and guides their participation if their annotations are inadequate. He also provides individual feedback about their annotations in their grades.

***Bringing Students Back to Annotations***

Cedar shared that social annotation situated learning differently than a discussion board. While his initial design with SA was merely reading and annotating, he introduced new activities like reading in small groups, providing better prompts, and replying with agreement or disagreement to a peer's annotation. With these design changes, he noticed how students engaged better, their learning experiences became richer, and they enjoyed annotating.

Cedar also discussed the importance of a synchronous component in online courses, which his courses do not have:

> *If there was a synchronous component, [I would have] small groups of students cover certain parts of the article and present it back to the class. It is sometimes difficult to understand how well the student has engaged with the article. It is not just seeing that they have annotated twice. What did they understand about the whole article? How is the knowledge being constructed throughout?* [Interview 2, March 13, 2023]

He also identified that having a space to answer student questions or have conversations they could bring to that week's class and share it with everyone would have been helpful.

However, he mentioned that he strives to strike a balance without giving extra workload for students to do the annotation activities, doing a synthesis, and keeping students engaged throughout the course.

### *Assessment and Feedback*

Cedar requires a minimum of 280 characters for student annotations and responses. He also asks students to make at least two individual annotations and one response and grades them for completion. He uses the analytics tool Chromewell to count student annotations they made and does not use a formal rubric to assess them. However, he requires students to make significant annotations; "An annotation has to be significant—a few lines related to the text that cover the idea, not one word. I show them examples of good annotation from past courses" [Interview 2, March 13, 2023]. He added that he has a similar requirement for the reply to peers and should include a core argument that is more than a sentence long. The specificity and depth of the annotation are essential for credit, along with providing evidence for their perspective. Cedar commented that students are often diligent about providing substantial annotations. For those who require help, he reaches out to them individually and guides them through the skills they need to work on.

### *Challenges*

Cedar identified a few challenges in using SA. He talked about balancing the different tools and multimedia used in a course because it may create a cluttered learner experience. He also discussed how it is essential to be consistent with SA activities without overwhelming students with too much complexity and giving them just enough to engage them in discussions. Cedar also wondered if SA activities are more like discussion boards without appropriate facilitation. He worries whether students are merely skimming the course text and finding a

paragraph and a peer response to reply randomly without taking in the complete learning experience. Finally, while he considers making the SA activities more rigorous, he questions if the workload for undergraduates "would be too demanding for students taking the course online. So, you are unsure how to evaluate their complete understanding of the entire piece" (Interview 2, March 13, 2023).

**Participant #3: Aspen (She/Her)**

Aspen is a non-tenure track teaching professor in the communication department. She has been teaching for 11 years and entirely online since the pandemic. She commented that she loves teaching online. She is the course coordinator for the communication studies programs. She teaches communication studies, a writing intensive analysis of argument class for undergraduates. She teaches two sections online, one asynchronous and another synchronous, and was able to articulate her design and implementation differences in both course modalities. Aspen also discussed her pedagogical and research interests, which include accessibility and critical pedagogy:

> *I am interested in access issues. My research happens at the intersection of communication and disability and how we can harness Universal Design for Learning and pair it with Critical Communication Pedagogy. Everybody does better when we focus on people with barriers to education access. That guides my thinking. I am interested in culture, power relationships, and reducing access barriers for people in higher education.* [Interview 1, January 27, 2023]

Aspen considers herself a critical communication pedagogue. Her design and pedagogies focus on active learning, where students can construct knowledge together. She uses a backward design approach centered around universal design for learning principles. She focuses on the

primary learning goals for the course, the different types of students that take the class, the barriers they might encounter in accessing the curriculum, and designs to reduce them. All her activities and assignments offer flexibility as much as possible, and she revises her strategy based on student feedback and suggestions.

***Discussing Social Annotation***

Aspen came across the SA tool Hypothes.is as she was reading about facilitating discussions online:

> *I knew the tool existed. I did not know how to talk about it or how it would work. I teach my class remotely and wanted to recreate discussions with the asynchronous class. From what I understood, students would have conversations in the annotation that would be useful in their understanding of course material. So, I decided to try it. I tried it with zest.* [Interview 1, January 27, 2023]

She started using the tool Hypothes.is in an asynchronous class first and expanded to a synchronous course. She shared how there was not much guidance on implementing SA when she learned about Hypothes.is; after experimenting with the tool, she learned more about design and implementation from the Hypothes.is design team that the tool provides.

***Designing with Social Annotation***

Aspen teaches one synchronous section and one asynchronous section of a 14-week undergraduate course on argument analysis. She uses Canvas to share the weekly modules and activities and uses a version of the application that allows integration into her Learning Management System. Students are required to download the Hypothes.is plugin, activate it, and annotate the course reading (online, in a PDF integration with the canvas LMS).


*Figure 10.* Aspen's annotation activities on her course Learning Management System.

Her main learning objective for this course is for students to use language to recognize, explore, analyze, and produce sound arguments by reading others' work and recognizing how they use the topics from the course to make arguments. Aspen also shared how to use Hypothes.is helps her align the learning objectives better. Students connect primary concepts better, read and reflect on others' arguments, and integrate them into their work.

> *One of the goals of the course is to take perspective to develop desirable communication skills and practices that are valuable as an employee or an employer. I found in the social annotation that I never found on discussion boards unless it was the rare student who liked conflict. I never saw them disagree. In social annotation, they disagree with one another.* [Interview 2, March 17, 2023]

Social annotation provides a safe space to disagree and have an authentic conversation and helps her facilitate and draw perspectives out of students. Students evaluate and deploy strong evidence to support their arguments when they make responses in social annotation and ask each other questions. She said in her in-depth interview, "Social annotation helps students

critique something and use it to move their thinking along." That, to her, is one of the most crucial course learning goals.

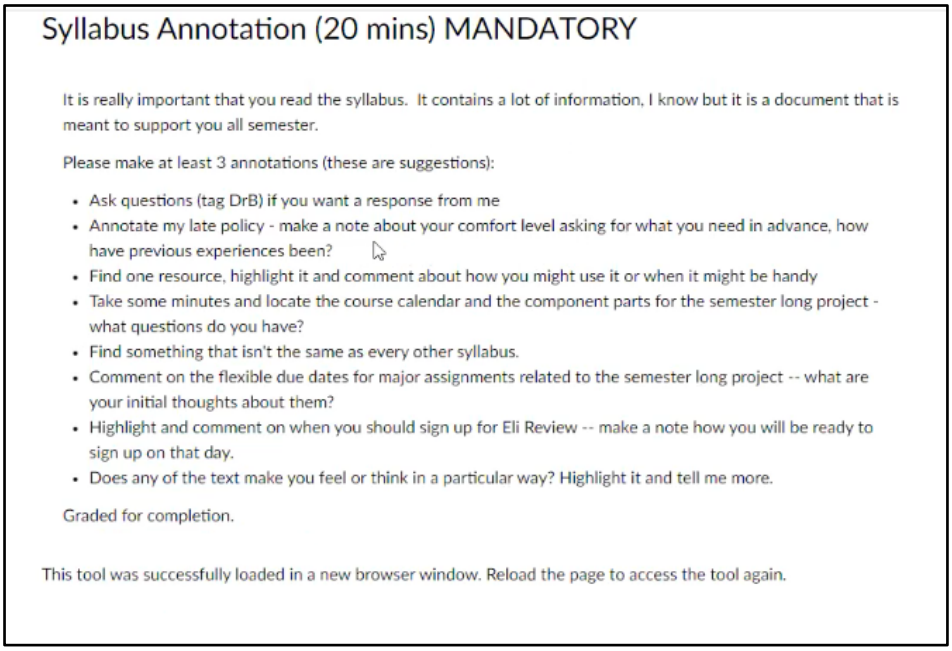



*Figure 11.* Aspen's syllabus annotation during the first week of the course.

***Syllabus Annotation***

Aspen talked about the importance of modeling social annotation by beginning the semester by having students complete syllabus annotations (see Figures 11 and 12). *"*I have them annotate the syllabus and use that as a training session for them; this is how you do it" [Interview 2, March 17, 2023]. During the syllabus annotation, she explains to students who do not annotate or reply according to requirements that they will not receive full credit if they do not complete the required annotations.

She also helps students understand annotation assignments and provides much support and feedback about annotating course readings from the following weeks; *"*If you do not answer your peers' questions next time, I will take off 4 points. I let them know, and it is up to them to

read and follow the feedback" [Interview 2, March 17, 2023]. She also provides space for students to ask questions and recommends reviewing the instructions and feedback.

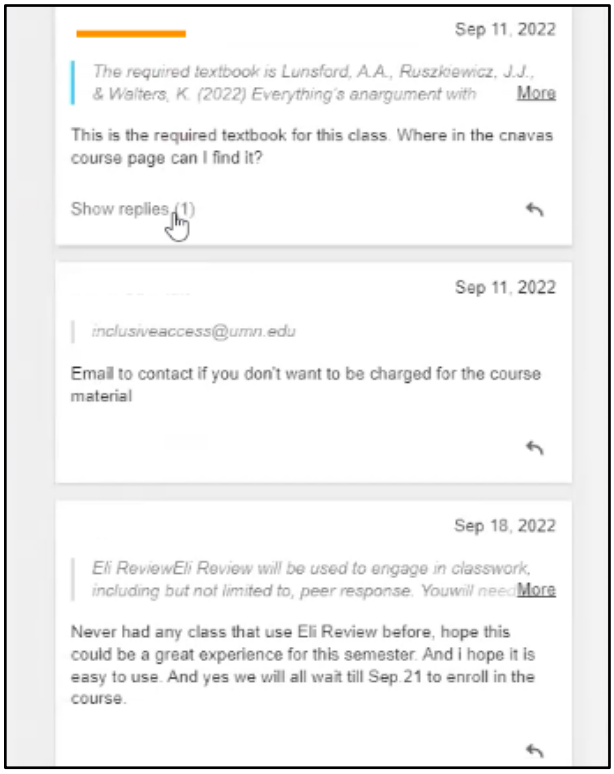



*Figure 12*. Student annotations to Aspen's course syllabus.

### *Annotation Design Before the Synchronous Class Meeting*

Aspen's Course Designs with Hypothes.is have evolved, but many components remain similar. For example, she provides diving board prompts for students to annotate and respond to a course reading (see Figure 13); "I tell them they have to ask and respond to a question. I offer them opportunities to connect to our current chapter and give questions about the content" [Interview 2, March 17, 2023]. Aspen uses a pre-class annotation activity for students to go over course readings actively, annotate specific aspects they would like to learn and discuss more in their upcoming synchronous class meeting, and come up with questions or ideas they want to discuss more. This annotation activity provides the students with the space and time to come up

with questions and perspectives on course topics, and the synchronous discussions and silent annotations provide a chance for students to see how their ideas have changed. Aspen also shared in her introductory interview that "social annotation gives students the time to think and come up with questions ahead of the class and lets them marinate and have a better discussion and conversation with peers."

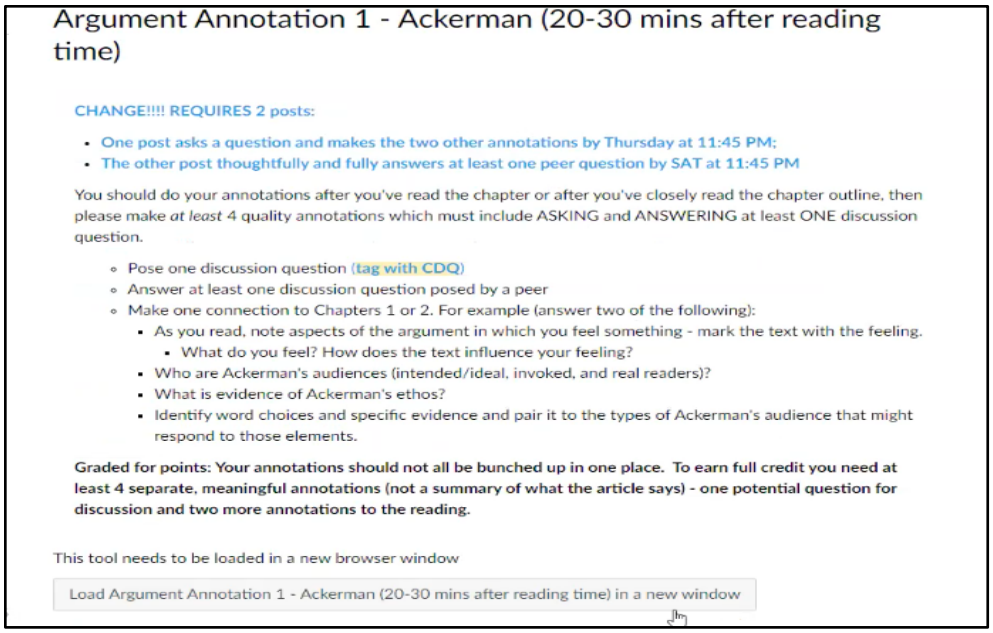



*Figure 13*. Aspen's annotation activity design with prompt questions.

Aspen also provides prompts that bring out student perspectives and help facilitate conversation. She asks students to make three annotations, one of which is a question, and respond to one peer. She grades the response to the peer most heavily. She added that while there are other ways to have discussions online, she finds this more authentic and contextual.

***Silent Discussions/Silent Annotations in Synchronous Class Meetings***

Aspen shared her innovative, synchronous annotation approach called "silent discussion." After giving staggered deadlines for students to make individual annotations and respond to a peer's question, everyone annotates together during the synchronous class meeting.

*We read the questions for about 3 minutes. They pick a question they want to respond to, and they make an annotation for another 3 minutes. We read responses for another 3 minutes and have three more minutes to see how the questions have changed or what the conversations have been.* [Interview 2, March 17, 2023]

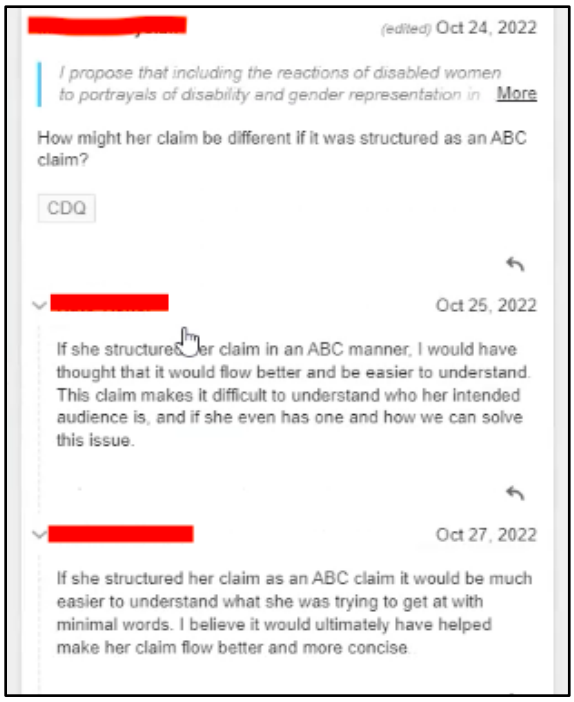



*Figure 14*. Student discussion on Hypothes.is

Aspen believes that without silent discussion, students would not go back to probe further into each other's questions and reflect on different perspectives. She added that students are more willing to disagree and contribute better to the conversation when not put on the spot. This design also helps her reduce access barriers for people who need more communication. Before asking students to wrap up the silent discussion, she asks them if they want to share anything with the class.

***Bringing Students Back to Annotation***

Aspen also described using SA in her asynchronous course section. She says that asynchronous classes cannot be similar to their synchronous counterparts – students get different experiences through different modalities and designs. She wants her content to be meaningful for students in both sections and for students returning to the annotation platform to work better in the synchronous modality. In the asynchronous section, she says,

> *I dislike that people can post on Tuesday, respond to a question, be done, and never return. I want them to come back on Thursday and see what everyone else has said, and that is the sticking point in asynchronous learning for me that I have not been able to figure out right.* [Interview 2, March 17, 2023]

She added that there are many steps for students, moving in and out of a weekly discussion. So, she provides summaries of student annotations and questions in the following week's overview videos in her asynchronous section and tries to keep student responses closed until everyone makes annotations. She is continually trying to figure out ways to improve bringing students back to annotations.

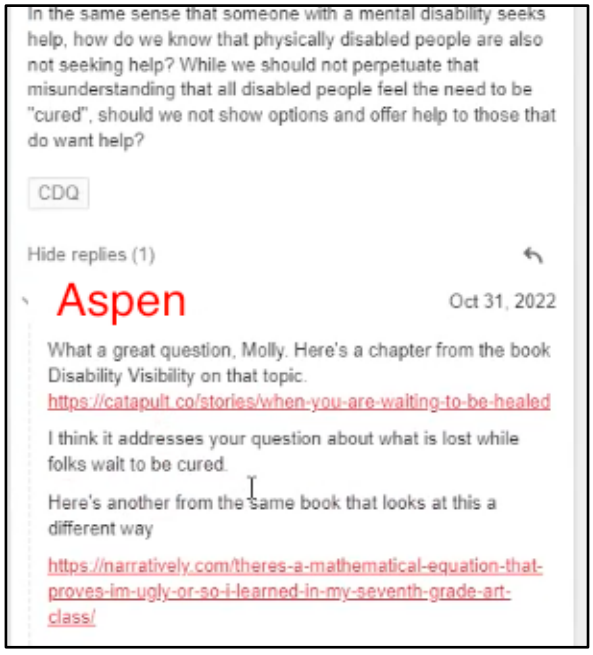


*Figure 15.* Aspen's participation and response to student annotations.

***Instructor Participation in Annotation Activities***

Aspen participates in SA more in her asynchronous section than in her synchronous one. Her comments focus on the reading, why it is interesting, and helping facilitate student participation (see Figures 15 and 16). She also provides feedback to students if they are meeting the requirements and what they need to complete for credit. Aspen added that it is challenging to balance participating, not concluding the course topics, and leaving annotations open for students to discuss. She elaborated that if the student discussions are going well, she focuses more on facilitation through prompts and silent discussion but jumps in to ask and answer questions if they are not coming back to complete the activity. She also talked about some students needing a response from the instructor or a peer, and it is challenging to go back and address questions. However, she ensures that students get their queries answered or tied back to in some way or another through a summary or feedback; "They might not get my feedback tied exactly to that moment, but all the assignments have a purpose, and I will always touch on them at some point" [Interview 1, January 27, 2023].

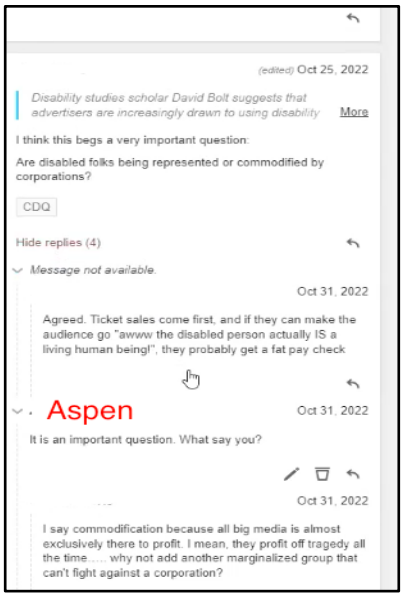



*Figure 16.* An example of Aspen's response during "silent discussions."

***Assessment and Feedback***

Aspen grades student annotations for completion and sets a higher percentage of the grade for responding to peers' annotations.

> *The assignment is worth 8 points. If you do it, I will give you all the points. However, if you do not have a response to a peer, you lose 4 points off the top because that is valuable. If you do not have a question, you lose two more points. The other two individual annotations are worth one point each. It is not a formal rubric, but what matters most is that they are engaging with each other. They are jumping from their ideas.* [Interview 2, March 17, 2023]

She asks students to think about what they want from the class and tells them that the discussions should go beyond head nodding and saying the right thing; "Students want me to pay in points for what they do, and I just want them to learn. Well, let us strike a medium. Show me your learning, and I will keep giving you points" [Interview 2, March 17, 2023]. Aspen wants students

to focus more on identifying the levels of argument in the readings and moving beyond merely commenting on specific aspects of the text. She asks students to explain their credibility and provide evidence for their arguments.

***Challenges***

In her second interview, Aspen identified some challenges in designing and implementing online courses with SA. She commented in the second interview, “Do I know if they read the whole piece? Do they read a paragraph and then just make an annotation? Are they getting the gestalt? I do not know.” Despite this challenge, Aspen shared that instructors generally may never know if students understand what you need them to, at least a few of them. As an instructor, the real focus for her is on designing with SA to focus on bringing out students' perspectives, perceived connections to the course topics, and their real lives. However, despite some challenges, she thinks designing with SA is worth using in online courses: “There are so many wonderful things about it (SA) that even if something falls through the cracks, you just have to go with it because it is such a great tool; it is worth the accidents” [Interview 2, March 17, 2023].

**Participant #4: Aurora (She/Her)**

Aurora is a tenured dance department associate professor. She has over 15 years of teaching experience and started teaching online during the pandemic. She teaches two online synchronous courses to undergraduates, an introduction to dance class and a class about dance in popular culture. In our conversations, Aurora shared that her teaching interests and pedagogies mainly focus on practices of racism, anti-racism, and social change. Her pedagogies and course designs focus on everyday life racism happening in a white supremacist society and using

theories of improvisation to understand and address social change using conversation. Aurora considered redesigning reading activities for her introductory course before COVID-19:

> *How do I test them on their reading? Do I give them a pop quiz just to make them read? Nothing seemed effective, and students did not like the strategies because they were not authentic in that we had to read or get a pop quiz! I was leaning towards ideas for having students read together.* [Interview 1, February 01, 2023]

She also talked about wanting to get her students excited about reading, writing, and scholarship and understanding why they are essential.


*Figure 17*. Aurora's social annotation activities on the Canvas LMS.

### *Discussing Social Annotation*

When COVID-19 forced everyone to transition to emergency remote learning, Aurora needed help with design and pedagogy while teaching online. Two researchers from another department at the university introduced the social annotation tool, Hypothes.is, to her as a part of their research project and asked her to participate in their study. She found SA interesting when they explained how it works. In her introductory interview, she shared that she was happy to

have found a tool that is helping her teach students how to read. I was very excited when they contacted me and thought this would be great because I did not know what I would do for fall. I loved the idea of using Hypothes.is because one of the horrible things about COVID-19 was the isolation students were experiencing" [Interview 1, February 01, 2023].

Aurora's passion for using SA is evident in her interview; the first thing she mentioned in her introductory interview was, "I love studying SA. I also talk a lot about it and give workshops on how I use it."

***Designing with Social Annotation***

Aurora strongly believed that reading does not have to be a lonely activity. She did not want her students to read in a vacuum or for credit. Students need to get feedback as they read and change their understanding of reading.

> *I wanted them to consider reading as students' knowledge from different understandings and skill levels. When they come to my online, synchronous class, I aim for students to share their knowledge and get different perspectives on what we are discussing.*
>
> [Interview 2, March 08, 2023]

The researchers who approached Aurora provided design frameworks for her to contextualize and implement in her online courses when using Hypothes.is. While the frameworks given by the researchers were interesting, Aurora initially simplified their use for two of her classes on dance and theater arts, which were synchronous 14-week undergraduate online courses. She used Canvas for the course and shared all the weekly modules, activities, and deadlines on the LMS page (see Figure 17). Hypothes.is has an LMS app version integrated with a university Canvas LMS, and Aurora also used this integration for all the reading activities. Students annotated the weekly readings by activating the Hypothes.is plugin in their course

modules. One of her main goals for her students was to get them excited about reading, writing, and scholarship; “My theory for this class is that to be a good writer, you have to be good readers. Moreover, how do you teach them that in meaningful ways? When I started teaching with Hypothes.is, I said, " Oh, this is helping me teach them how to read" [Interview 1, February 01, 2023]

Aurora’s courses include studying topics on race and culture in the African diaspora with a decolonial feminist pedagogy. She elaborated that students have different ways of approaching the course readings and bring in various knowledge about the text. Her learning objectives include students gaining confidence as readers, sharing, changing, and challenging perspectives, and synthesizing them in her writing-intensive course. Aurora added that Hypothes.is helps bring student perspectives together, supports critical reading in students, and helps develop reading as a social activity. SA brings students from different backgrounds together as they challenge and critique each other.

***Annotation Design Before the Synchronous Meeting***

Aurora provided articles for students to read and annotate every week. She asks students to make two individual annotations, highlight specific excerpts from the text, and respond to the annotations made by two of their peers. She has staggered deadlines for making individual annotations and responding to peers so everyone in the class has the time to read and respond to others. She also encourages students to use the tag features available on Hypothes.is to tag specific course topics, questions directed to her, and topics they would like to discuss in class.

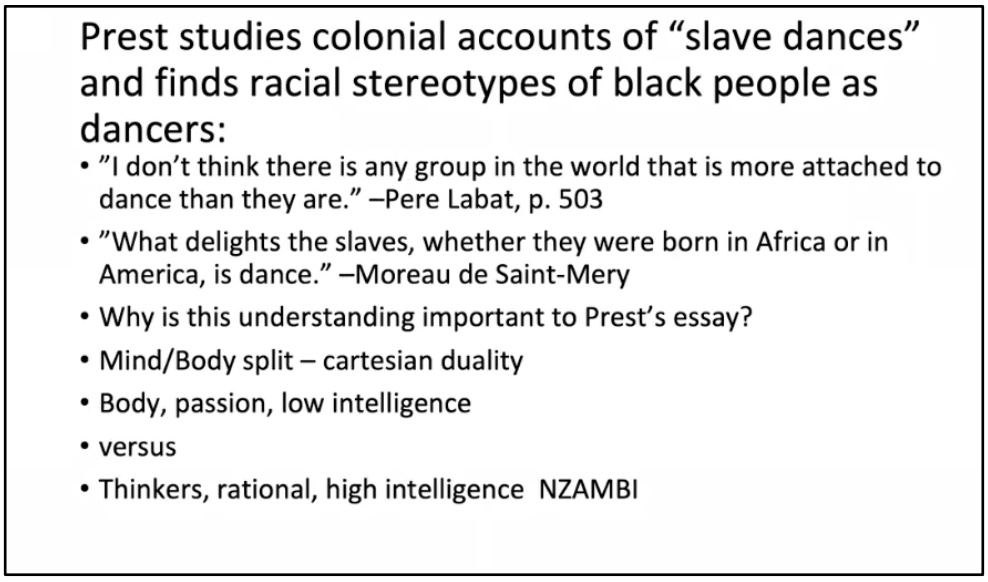



*Figure 18.* Aurora's prompt questions for a social annotation activity.

Aurora also stressed the importance of giving guiding prompts and questions for students to guide their thinking as they move through articles (see Figure 18). She explains, "I try to give prompts that also move them through the reading comprehension. I say, what do you want to know? What questions do you have? How does the author characterize blackness or diaspora?" [Interview 2, March 08, 2023]. Aurora discussed that she facilitates student thinking and knowledge construction as they share their perspectives in the annotation space. She also guides students to critique text from the reading, disagree if required, and make their argument. She also has some annotation activities without prompts to see how conversations flow without her direction.

***Student Roles***

The researchers who initially approached Aurora about using Hypothes.is in her courses helped her with course design frameworks. They explained using Hypothes.is could effectively be integrated into her Canvas LMS course page. They showed her the model of having different student roles to facilitate conversations in a synchronous online course. In this design, students

have three roles: facilitator, synthesizer, and summarizer (see Figure 19). *Student facilitator*s facilitate group conversations by posing questions, guiding prompts, and directing student responses. Student *synthesizers* combine and synthesize the group's ideas about the text and course topic in Hypothes.is. *Student summarizers* summarize the annotations and discussions and share them with the class during synchronous Zoom meetings. While Aurora tried implementing this structure in her courses, students were confused about their roles and did not complete work on time. She also found it challenging to facilitate student participation without a teaching assistant who could send reminders and help students. She shared that she returned to a simplified annotation and response design but hopes to resume and evolve this suggested design.


*Figure 19.* An example of student roles in their social annotations.

***Bringing Students Back to Annotations***

Aurora designs for her students to return to their annotations during her synchronous class meetings on Zoom. She wants them to see what has changed in their annotations and responses, what some effective annotations are, how they have influenced or changed their

perspectives about the topic, and what can be discussed or questioned further in class. She asks students to meet in Zoom breakout rooms for a few minutes and compile exciting annotations. Next, students bring them back to the class and explain why they found those annotations interesting. She also reads student annotations, questions, and tags before class and adds some questions or annotations on a Google Slide for further in-class discussion. This way, students can fill in knowledge gaps in their way without having to raise their hands or be on the spot for any question or a different perspective they might have. This activity also allows for a holistic reflection for students to understand how their thinking about a topic evolved during the week.

***Post-Class Reflection Activity***

Aurora has an end-of-semester reflection activity related to the annotations that students engage in throughout the semester (see Figures 20 and 21). Students sort annotations associated with each other in a course topic or an overarching question she gives.

> *I wanted them to come to an understanding of what is diaspora. It is like giving them an exam without giving the exam. They had to develop six annotations of their own or from others they could cite, group them into three or more groups, and label them. They analyze why they fit together.* [Interview 2, March 08, 2023]

She explained that students analyze the topic and summarize in their writing reflection what holds the chosen annotations together and why.

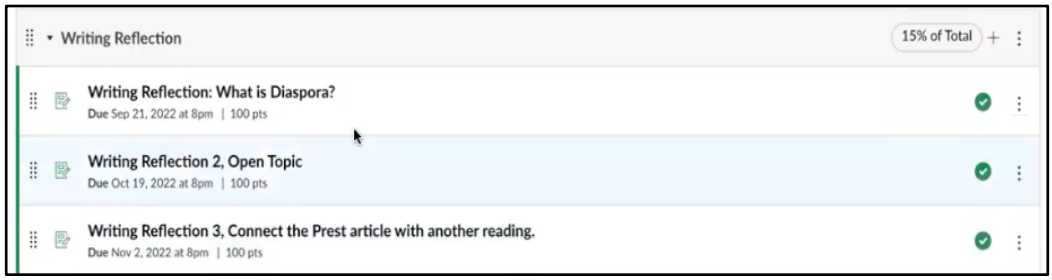
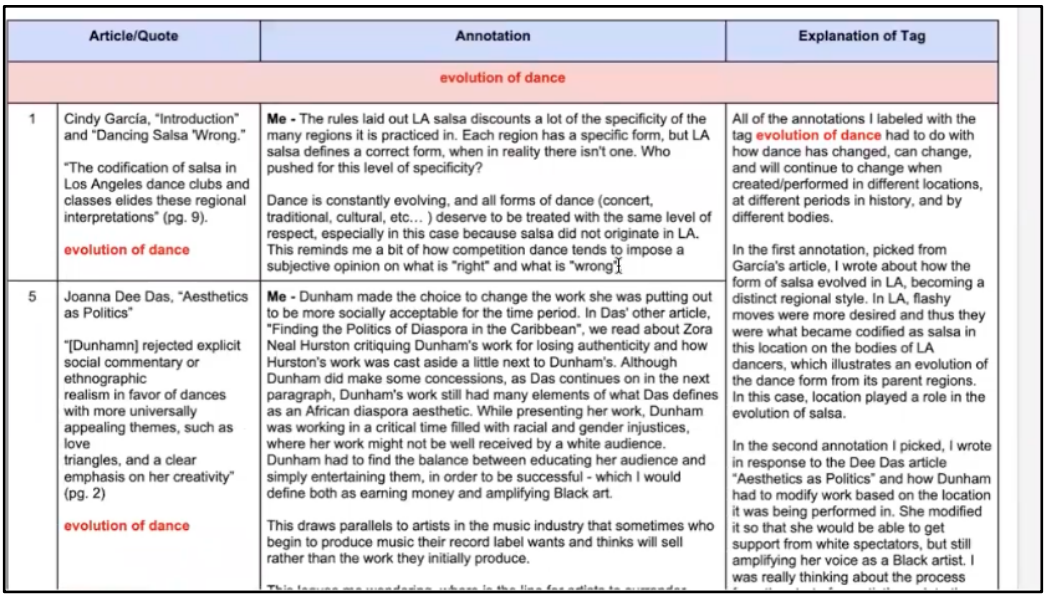



*Figure 20*. Aurora's writing reflection activity is based on social annotation.



| | Article/Quote | Annotation | Explanation of Tag |
|---|---|---|---|
| | | evolution of dance | |
| 1 | Cindy García, "Introduction" and "Dancing Salsa 'Wrong.'<br><br>"The codification of salsa in Los Angeles dance clubs and classes elides these regional interpretations" (pg. 9).<br><br>evolution of dance | **Me -** The rules laid out LA salsa discounts a lot of the specificity of the many regions it is practiced in. Each region has a specific form, but LA salsa defines a correct form, when in reality there isn't one. Who pushed for this level of specificity?<br><br>Dance is constantly evolving, and all forms of dance (concert, traditional, cultural, etc… ) deserve to be treated with the same level of respect, especially in this case because salsa did not originate in LA. This reminds me a bit of how competition dance tends to impose a subjective opinion on what is "right" and what is "wrong" | All of the annotations I labeled with the tag evolution of dance had to do with how dance has changed, can change, and will continue to change when created/performed in different locations, at different periods in history, and by different bodies.<br><br>In the first annotation, picked from Garcia's article, I wrote about how the form of salsa evolved in LA, becoming a distinct regional style. In LA, flashy moves were more desired and thus they were what became codified as salsa in this location on the bodies of LA dancers, which illustrates an evolution of the dance form from its parent regions. In this case, location played a role in the evolution of salsa.<br><br>In the second annotation I picked, I wrote in response to the Dee Das article "Aesthetics as Politics" and how Dunham had to modify work based on the location it was being performed in. She modified it so that she would be able to get support from white spectators, but still amplifying her voice as a Black artist. I was really thinking about the process |
| 5 | Joanna Dee Das, "Aesthetics as Politics"<br><br>"[Dunhamn] rejected explicit social commentary or ethnographic realism in favor of dances with more universally appealing themes, such as love triangles, and a clear emphasis on her creativity" (pg. 2)<br><br>evolution of dance | **Me -** Dunham made the choice to change the work she was putting out to be more socially acceptable for the time period. In Das' other article, "Finding the Politics of Diaspora in the Caribbean", we read about Zora Neal Hurston critiquing Dunham's work for losing authenticity and how Hurston's work was cast aside a little next to Dunham's. Although Dunham did make some concessions, as Das continues on in the next paragraph, Dunham's work still had many elements of what Das defines as an African diaspora aesthetic. While presenting her work, Dunham was working in a critical time filled with racial and gender injustices, where her work might not be well received by a white audience. Dunham had to find the balance between educating her audience and simply entertaining them, in order to be successful - which I would define both as earning money and amplifying Black art.<br><br>This draws parallels to artists in the music industry that sometimes who begin to produce music their record label wants and thinks will sell rather than the work they initially produce.<br><br>This leaves me wondering… where is the line for artists to surrender | |

*Figure 21.* Example of a student's writing reflection, which includes analysis of annotations.

Along with grouping and writing about annotations, students in this writing-intensive class also compare, contrast, and synthesize their reflections about the topics and present their arguments. Connecting student annotations to their final papers helped her design a well-layered assessment that improves student writing and analytical skills.

### *Instructor Participation in Annotation Activities*

Aurora discussed her participation in guiding and scaffolding students' discussion on Hypothes.is. She explained that she sometimes responds to students' questions, and when she had a teaching assistant, they were actively scaffolding student discussion. Now that she does not have one, she tries to respond to a few students each week and focuses more on compiling student ideas and questions for synchronous discussion. She shared an example of how she scaffolds student discussion.

*If students do a discussion post, they tend to cherry-pick and summarize responses. Moreover, in social annotation, you know their thinking process and how it changes. As I read students' annotations, I see some shallow comments like I love diaspora, wonderful sharing of dances. I ask them what different ways of thinking about diaspora are. What is happening at the heart of it? Colonization, enslavement, human trafficking- that is not so wonderful, right? How do we be careful about thinking about diaspora?* [Interview 2, March 08, 2023]

***Assessment and Feedback***

Aurora shared that she provides students with assessment and feedback using an informal rubric for effective annotations they help create.

*Early in the semester, I ask students to discuss effective annotations. When you read through annotations, I want you to find your favorite ones and consider why they are good. In breakout rooms for 5 minutes, what about these annotations that people made that made them interesting for you? Why did they stand out? And then I make a list.* [Interview 2, March 08, 2023]

She said her students share ideas like answering the prompt, going in-depth, or quoting another reading. When students create the rubric, she provides specific feedback on what she would like them to discuss further. She tells students, "You mean interesting. The interest says nothing. Why is it interesting? We want something vivid, even if it is one great sentence" [Interview 2, March 08, 2023]. This way, she has students create their rubric about making a good annotation and has them refer to it for the following annotation activity.

Aurora's assessment also requires the completion of annotations and responses by the due date; "They get 100 points in total. Each annotation is worth 25; if they only did 3, they get 75."

She also asks students to go back and complete the missing annotation to receive their missed points.

***Challenges***

One of Aurora's biggest challenges is teaching a writing-intensive course without the support of a teaching assistant. She discussed how having a teaching assistant in the past helped keep track of student roles and keep them engaged on the SA tool. Still currently without a TA, she tries to send reminders to students about the assignments and their roles (facilitator, synthesizer, summarizer) and respond to student questions. However, having synchronous meetings allows her to discuss student annotations further, even when she cannot respond to them directly on Hypothes.is.

**Participant # 5: Clay(he/they)**

Clay is a doctoral candidate and a graduate instructor in a liberal arts program. He has four years of teaching experience and teaches the first-year writing courses all undergraduates must take. Clay mainly mentions emotions, discussions, feedback, and writing projects when describing their pedagogy. He discussed that he does not give any grades to his learners except for the final one, which allows them to focus more on participation, essentially engaging in discussions instead of incentivizing participation with points. Their teaching draws from Paulo Freire's book *Pedagogy of the Oppressed* (2020), and he follows the anti-banking approach. He gives students much space to talk about emotions in their course. The writing projects for the course include a literacy narrative, a synthesis paper, and a research project or an essay. Because Clay has a small number of students in his classes, they can focus individually on students, scaffold, provide individualized feedback, and guide their thinking and writing. Their design and pedagogy are mainly dialogue and discussion-based, providing students the voice and agency to

decide on activities they like. Clay uses an activity called Keep.Start.Stop where students can suggest what they want to keep and what they want to start and stop at the end of every project. Clay also allows students to contextualize projects according to their interests.

***Discussing Social Annotation***

Clay first heard about social annotation as one of the available resources in the department orientation for first-year writing instructors. He was curious about Hypothes.is and started experimenting with his course design around social annotation. They provided a template to their students on using Hypothe.is along with some context on why social annotation is helpful. Clay adds, "You can see your peers working with you and what interests them. If you are worried if your point is right, look at what your peers are doing. You can build off what they said" [Interview 1, January 27, 2023].

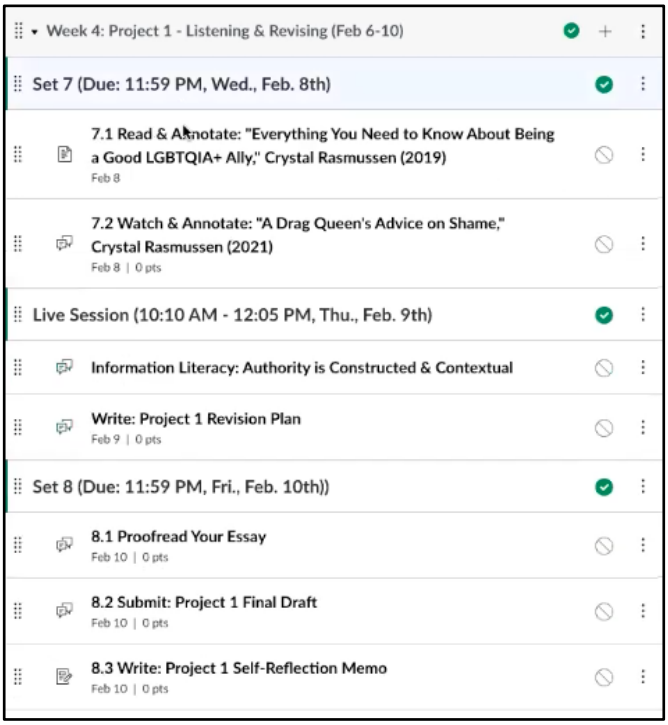
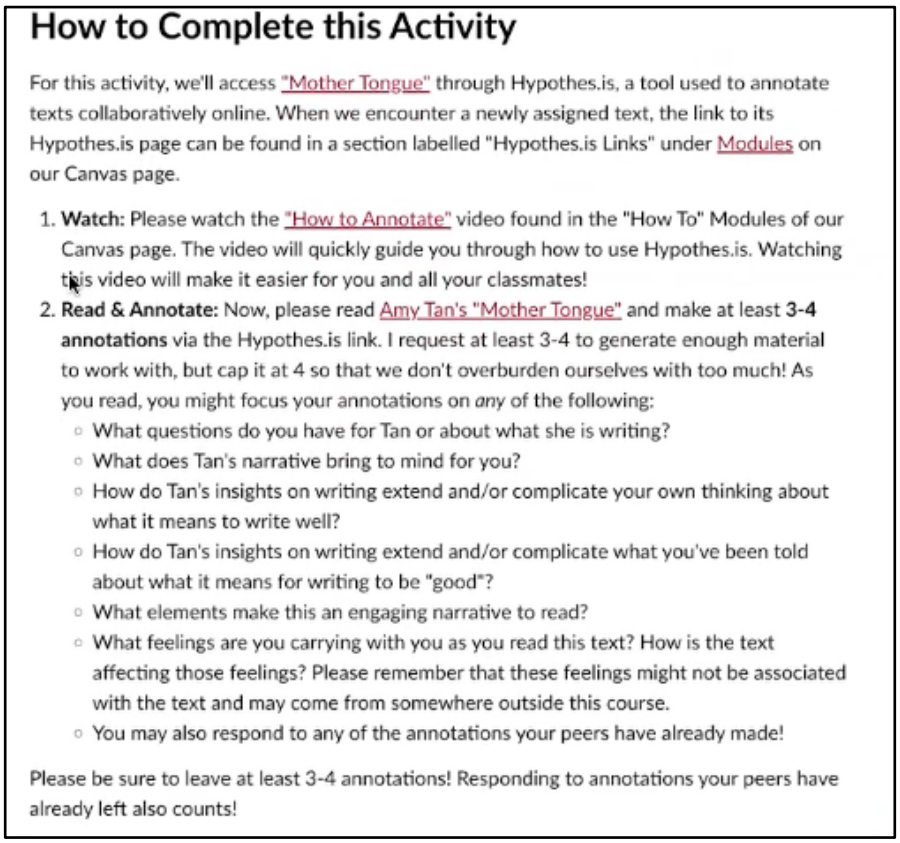



*Figure 22*. Clay's social annotation activity design on their Canvas LMS.

***Designing with Social Annotation***

I asked Clay to share how they designed and implemented the first-year writing course and how social annotation aligns with the learning objectives (see Figure 22). His course is 14 weeks long, completely online synchronous, and they meet on Zoom for two hours once a week. The course is on Canvas and Hypothes.is is integrated into this LMS. One of Clay's main learning objectives for this course is to focus on relational communication through the course and practice being interested in each other's ideas and perspectives. He said in his introductory interview, "It is also interesting to see what parts of text students are gravitating towards and what is getting them to say what they are saying" [Interview 1, January 27, 2023].



## How to Complete this Activity

For this activity, we'll access "Mother Tongue" through Hypothes.is, a tool used to annotate texts collaboratively online. When we encounter a newly assigned text, the link to its Hypothes.is page can be found in a section labelled "Hypothes.is Links" under Modules on our Canvas page.

1. **Watch:** Please watch the "How to Annotate" video found in the "How To" Modules of our Canvas page. The video will quickly guide you through how to use Hypothes.is. Watching this video will make it easier for you and all your classmates!
2. **Read & Annotate:** Now, please read Amy Tan's "Mother Tongue" and make at least **3-4 annotations** via the Hypothes.is link. I request at least 3-4 to generate enough material to work with, but cap it at 4 so that we don't overburden ourselves with too much! As you read, you might focus your annotations on *any* of the following:
   - What questions do you have for Tan or about what she is writing?
   - What does Tan's narrative bring to mind for you?
   - How do Tan's insights on writing extend and/or complicate your own thinking about what it means to write well?
   - How do Tan's insights on writing extend and/or complicate what you've been told about what it means for writing to be "good"?
   - What elements make this an engaging narrative to read?
   - What feelings are you carrying with you as you read this text? How is the text affecting those feelings? Please remember that these feelings might not be associated with the text and may come from somewhere outside this course.
   - You may also respond to any of the annotations your peers have already made!

Please be sure to leave at least 3-4 annotations! Responding to annotations your peers have already left also counts!

*Figure 23.* Clay's social annotation activity design includes guiding prompts.

He also wants his students to locate, critically evaluate, and communicate information effectively. His other learning objectives for the course include developing students' critical

thinking, writing process, and collective meaning-making. He discussed that social annotation helps students communicate the meaning they see across a text, share different perspectives, identify the lens through which they understand the topic, and think deeply about it. Social annotation in a writing course also helps students become critical readers and build relationships and a learning community with peers as they find meaning together.

> *How can we be in an ethical, empathetic, and critical relationship with one another? I use social annotation as an example of this kind of communication. It is not an activity you are doing for points. Are you building relationships with your peers through writing because you are getting to know something together? It does not matter what the artifact is. It is more about being conscious of how we respond, react, and are with each other in a relational space.* [Interview 2, March 13, 2023]

***Annotation Design Before the Synchronous Meeting***

Most of the weekly annotation activity happens in Hypothes.is before the synchronous class meetings. They ask students to make two to three annotations on each course reading and respond to peers. Clay does not specify the exact number of individual annotations or responses, leaving it open to students. However, they provide guiding prompts and emphasize the focus of annotations on embodied experiences and emotions students feel while reading the article (see Figure 23]. Students are required to make annotations and responses before they meet synchronously. He emails students and discusses student participation or the lack thereof on Hypothes.is. Annotation activities do not have any grades; students only get a final course grade at the end of the semester. Clay's guiding prompts for student annotation provided a foundation and context about the course reading and instructions on annotating; "I offer them specific ideas

like, what emotions merge or swim through you as you read the article? Where in your body do they emerge?" [Interview 2, March 13, 2023].

Clay shared that the embodied experience of reading course text through SA is valuable for students to realize that they are not alone in experiencing and sharing a particular emotion with others. They want their students to listen and think about what it means to listen and understand others' feelings and ideas. Clay also provides general prompts to address the readings, like, "Why is this an interesting piece of writing? How can you respond to what your peers have already annotated?" [Interview 2, March 13, 2023]

Using the guiding prompts, he strives to compile various student questions and ideas they can discuss and explore further in SA and synchronous class meetings. His prompts guide active reading in students to think and respond critically to text and peers' annotations.

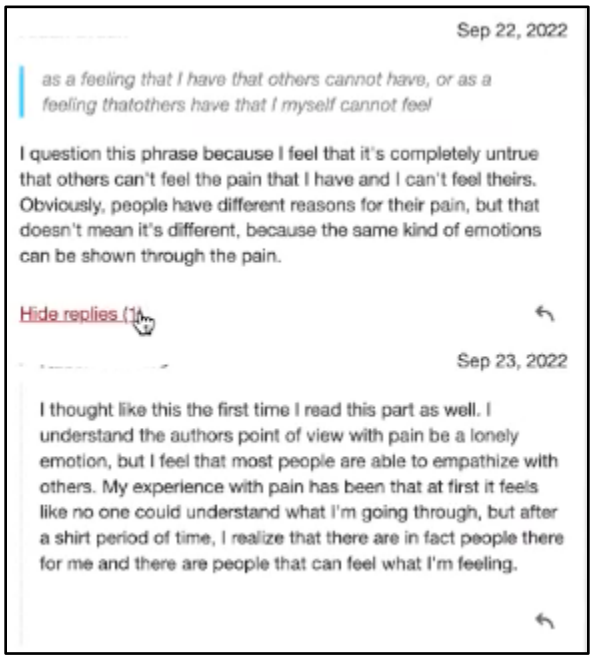



*Figure 24*. Student annotation discussions on Hypothes.is

***Bringing Students Back to Annotations***

Clay added that annotation helps connect course readings with real-life experiences, and the social part of responding to each other is making these connections through comparison, contrast, and responding (see Figure 24). Students gather in small groups in synchronous Zoom meetings, find their peers' annotations, and read them. He asks students to focus on "What interests you about your peers' annotations? What are you curious to hear more about? What are they saying that you had not thought about before?" [Interview 2, March 13, 2023].

He asks students to ask more questions or aspects they want to learn more about and shares some more prompt questions. Their idea behind giving time in class to go back to annotations is to practice being interested in each other's ideas and see how their perspectives have changed.

***Instructor Participation in Annotation Activities***

Clay shared that they do not participate in annotation activities as much as they want (see Figure 25). While he initially tried to respond to every student, he needed more time to respond to everyone. So, he focuses on answering students' questions, providing individual feedback, or facilitating student conversations by asking questions; "Sometimes, when a student says something exciting. Moreover, I think I have not thought of that. I am responding because that is a seer-like moment" [Interview 2, March 13, 2023].

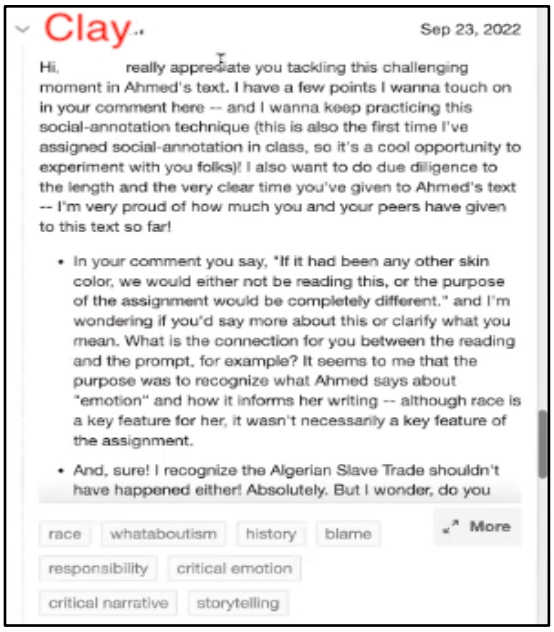



*Figure 25.* Clay's response to student annotations.

***Assessment and Feedback***

The hallmark of Clay's course design is not having formal individual grades for any activities except for the final course grade. They shared that students were uncomfortable with not getting grades for assignments, but it subsided a few weeks into the course. Clay asks students to make a few weekly annotations, respond to some of their peers, and then provide individual feedback throughout the semester.

> *I gently email them if they do not [complete] my requirements. I want them to make space beyond the bare minimum like this is interesting. However, what matters most to me is having an interaction and having points of interest that they can go to so they do not have to re-read the whole text again but use moments they are interested in class.* [Interview 2, March 13, 2023]

He also added that the purpose of his email reminders and checking in with students focuses on supporting them on aspects they need help with.

### *Challenges*

Clay shared that one of the biggest challenges they experience in using SA is taking the time and energy to integrate SA more effectively into the courses. He wants to think more about whether there is space in the curriculum to integrate better, considering the student workload in his course. He also wonders whether students only consider SA as one of the many activities they have to do for the class. They also added that it is essential for them, as an instructor, to design better activities so students are connected better to the platform and their engagement within the tool.

## Chapter Summary

This chapter described how all five focal instructors from this study used the SA tool, Hypothes.is, in their online undergraduate courses. It summarized the design processes of each instructor as they shared details about their course context and learning objectives, as well as their pedagogical processes in facilitating student discussions in the social annotation platform.

Two instructors (River and Cedar) teach online, *asynchronous* undergraduate courses. Their design and implementation approaches focus on student participation and engagement in an asynchronous learning context. SA is one of their major “during the week" course activities and has a large percentage towards the final grade. Most of the student discussions happen on Hypothes.is for both instructors and a few other collaborative tools like blogs, Twitter, and Jam board. Instructors spoke about going beyond the “annotate and reply” design to engage students better through SA, which can provide them with an authentic, contextual space to build a learning community. Both instructors also discussed that their participatory pedagogies include balancing facilitation and participation as instructors and encouraging student discussions. They

also shared some challenges they face while teaching an asynchronous section and engaging students in SA and discussed how they want to evolve their designs.

Three instructors (Aspen, Aurora, and Clay) teach online *synchronous* undergraduate courses. For these instructors, SA activities happen as pre-class before students and the instructor meet online synchronously. Each instructor has their version of discussing students' annotations and responses before the class. Aspen has students annotate and reply silently during their Zoom session, while Aurora and Clay ask students to discuss in small groups about each other's annotations. All three instructors also discussed integrating SA activities into other course activities to engage students better. They also discussed challenges like lack of time to participate and better facilitate student discussions on SA and how to improve and integrate SA in their online courses.

The next chapter provides a thematic analysis of instructor interviews that address the research questions for this study.

# CHAPTER 5: THEMATIC ANALYSIS

My dissertation study aims to explore why and how instructors use social annotation in their undergraduate online courses. I used the in-depth interview transcripts and research memos to address this question. I conducted a comparative thematic analysis to identify themes across all five focal instructors' design and pedagogical processes (Merriam & Tisdell, 2015). Five themes were prominent in this analysis as focal instructors talked with me about using SA in their online courses: 1) authentic conversations and a learning community are important to facilitate an online course; 2) social annotation encourages meaningful dialogue and critique among students and makes their knowledge construction and sharing visible; 3) designing for student participation in SA goes beyond "annotate and reply"; 4) striking a balance between facilitation and involvement as an instructor; and 5) Instructors' design and pedagogy continue to evolve with the use of SA. This chapter uses illustrations and examples from instructor interviews, syllabus walk-throughs, and research memos.

**Theme 1: Authentic conversations and a learning community are important to facilitate an online course.**

All five participants had different course modalities and contexts that accounted for their design and implementation differences. However, organic, and authentic student discussions and building an online learning community were some of the primary learning objectives for all instructors. While instructors mentioned using other learning technologies like discussion boards, those platforms only allowed learners to share summarized perspectives on course topics. In contrast, social annotation provided the affordance of highlighting specific points from a course text, discussing it within the context of the topic, and sharing their formative ideas around it. Additionally, instructors also shared that organic student conversations build a learning community in an online environment. When students discuss, share, and critique each other's perspectives, they create and sustain a learning community in the course.

***Authentic discussions on a social annotation platform.*** All five instructors shared their dislike for threaded discussion boards and indicated that as one of the main reasons for exploring SA. Clay discussed that discussion boards often take away context from the topic, making it less engaging for students. Student learning and meaning making are more visible when they focus on excerpts of a course text and explain what they think of it. As Clay puts it, social annotation is more "formative when students are developing ideas."

Aspen shared that discussion boards are often inauthentic, and learners do not actively read and critique the course material, unlike SA tools, where students negotiate, disagree, and debate the text and their peers' annotations:

> *There's nothing less authentic than a discussion board post, and everybody knows it. You could do other things. But social annotation is an excellent way to get people to pull out*

*[points] in the reading and then talk about it in class. I like social annotation because it replicates a more authentic discussion.* [Interview 2, March 17th, 2023]

She also indicated that she could design for students to engage in actual discussion in a more natural context. For students, SA is more anchored to having authentic conversations about course content.

River shared a similar perspective about how discussion boards only help students focus more on their individual and summative thinking of course topics. Cedar also indicated that SA provides a structured environment for students to read, annotate, and respond to peers instead of coming to discuss "something that vaguely fits the prompt and pulling it out of context" (Interview 1).

These instructors indicated that they shifted from discussion boards to reading and annotating using SA to engage students in active and focused reading. SA tools like Hypothes.is allow replicating contextual and authentic discussions in an online class. Aurora discussed that reading doesn't have to be a lonely activity. SA helps students have organic conversations with each other, share and learn each other's perspectives, and construct meaning together:

*When I think about any kind of reading that students do in any of my classes, it's just such a lonely activity. and sometimes I wish that I could have conversations with people I know while I'm reading, so I impose that idea on other students thinking that you know if this is assigned reading to them rather than feeling so lonely as they're reading like reading in a vacuum. Why not also learn what other people think about the reading?* [Interview 2, March 8th, 2023]

She also mentioned designing for her students to be excited about reading, writing, and scholarship, which are some learning objectives of her writing-intensive classes. Hypothes.is has helped her teach them how to read and write academically.

Designing and facilitating organic communication through an online learning platform was one of the primary objectives of all five instructors and why they started using SA. It helped instructors design an online class that builds connection through active reading, writing, and discussion.

***Building an online learner community through social annotation.*** Instructors noted that building an online learning community is challenging due to the absence of in-person discussions, particularly in asynchronous online courses. SA tools can create an online student community as they engage in conversations with their peers and the instructor and learn from each other. River discussed that SA provides the affordance of creating a learning community with her class online where students "feel connected to both social and cognitive aspects" of learning. She also mentioned that SA is a powerful tool for asynchronous online courses as students can feel more connected to each other where usual physical cues are absent.

Cedar discussed using social annotation to "introduce new tools and opportunities for students to collaborate and work together on course activities." He added to this by mentioning that students are more connected to the text and each other, with the SA activity designed to be more situational and contextual. Aurora reiterated that students do not have to read course materials in a vacuum when SA tools can help them learn what their peers think about the topic and have conversations around it. Clay emphasized the importance of relational communication through social annotation and "being aware of how we are responding, reacting, and being with one another in a relational space." He also discussed that contextualization and active reading are

essential for his writing class to build a learning community by drawing ideas together, communicating those thoughts, and making collective meaning.

**Theme 2: Social annotation encourages meaningful dialogue and critique among students and makes their knowledge construction and sharing visible.**

Instructors used social annotation to guide students' shared perspectives and ideas and facilitated situated and contextual conversations about course topics. They also shared that learners are more comfortable disagreeing and critiquing each other's perspectives without being harsh and using peers' ideas to guide their thinking. They said they didn't see this in other online platforms as much.

**Student perspectives, disagreement, and critique are visible.** Aspen noticed that student participation in social annotation differs from other online tools. She is amazed at the student's willingness to participate in discussions and critique perspectives while being respectful to each other. She also mentioned that while many students in a class are willing to answer every question, they seldom ask one. Aspen designed for her students to ask each other questions and move the discussion along:

> *I found in the social annotation that I never found on discussion boards unless it was like the rare student who liked conflict. I never saw them disagree. Okay. In social annotation, they disagree with each other's responses, and that's super exciting because I think a class discussion is challenging. It is one of the hardest things for me to facilitate and draw out of people, so social annotation gets everybody participating. It lets people take different perspectives in a way that doesn't feel harsh. They get to do different stuff, and you know that's a skill to critique something else and then use it to move your thinking along. That's why it's essential.* [Interview 2, March 17th, 2023]

River also had a similar perspective about the evidence of student participation using SA. Student annotations show evidence of critical and deep thinking, and "they have discussions on controversial topics and share opinions back." River shared an example of how a student referred to and drew from a peer's annotation in another individual reflection assignment. She considers this integration to motivate her to continue using SA more so students can learn from each other's writing. Clay echoed River's reflections:

> *Many of my goals while bringing annotations to the classroom are about practicing being interested in one another's ideas, which many students don't think is something you can control. But it is the beginning of practicing it right. It is sincerely trying to connect with someone and changing yourself positively rather than negatively.* [Interview 2, March 13th, 2023]

She mentioned that SA is a lot richer in terms of learning experiences and that it isn't merely responding to prompts. Student learning is situated and "more contextual, as you can see what the student finds interesting and comment on it."

Cedar discussed that learning objectives focus on bringing out perspectives. He said he uses SA to bring out students' thoughts and ideas and use each other's perspectives to move or change their thinking. Particularly in an online asynchronous class, using SA to read, annotate, and respond helps students think critically about something they missed and how it supports their understanding. He explains, "A lot of my learning objectives are related to ensuring students do a lot of writing, individually and in the form of a discussion. I want to ensure students interact and challenge their beliefs about certain topics" [Interview 2, March 13th, 2023].

Aurora shares a perspective similar to Cedar and explains how undergraduate students in her online classes come from different backgrounds and abilities. She explains that her goal for

the students is to “share their knowledge and to get different perspectives on what we are talking about” in class. Using SA gives that space to approach readings in different ways and the awareness that there are multiple approaches to learning from each other. She explains that she values students' different kinds of knowledge about the text and guides their thinking and confidence as readers and writers.

**Student knowledge construction, change, and synthesis of ideas are visible**. Another idea that instructors discussed was how student knowledge construction, critical thinking, and learning outcomes were more visible in SA activities than in other course assignments. Aspen shared that it can be difficult to clearly understand what students are taking away from a course activity. So, she focuses more on how her class applies the skills and learning objectives she intends for them to acquire. Critiquing course text or a peer’s perspective, using each other’s annotations to show how their understanding of a topic has changed, and sharing sources in an annotation to boost their argument are examples of visible student learning for Aspen.

River explained that students in her class were more comfortable citing and using annotations to move their thinking along. She discussed that “they used their annotations and their peers' annotations in their reflective writing. They also give credit and cite their peers’ annotations.” She explained how students saw different perspectives of their peers around a specific point in the text and went deeper to unpack that. She also explained that a mere summative reflection activity could not have achieved these objectives.

Aurora elaborated on an example of how a student’s thinking and perspectives changed during an annotation discussion on Hypothes.is. She explained how a student annotated reading material praising a form of dance while missing the racist tones that the article was focusing on.

However, as the learner read the annotations of other students critiquing the slavery and racism aspects, her responses later differed, with a change in thinking:

> *The student suddenly says, yes, I agree. It is horrific to think that colonizers used the fact that black people could dance to justify slavery, and she suddenly shifted her thought in the text. That is interesting. So, I feel like they read. They have a response, but here they are starting to synthesize ideas. This is excellent evidence of the learning one of them had.* [Interview 2, March 8th, 2023]

In summary, instructors' design and implementation processes with social annotation are centered around students and how they interact with the platform, peers, and instructors. Students critiquing each other and sharing perspectives and resources indicate their comfort and safety in using the platform to express themselves. This also helps instructors to continue their design and pedagogical processes with SA tools in a way that encourages students to have more conversations on SA platforms.

**Theme 3: Designing for student participation in SA goes beyond "Annotate and Reply."**

While the reasons for instructors using social annotation tools like Hypothes.is in their online courses are similar, some of their design and implementation processes differed. Instructors' learning designs, pedagogies, and assessment approaches depended on the learning objectives of the course, their teaching philosophies, and the modality of the online course. This theme includes some similar elements in instructors' design and pedagogical processes.

All instructors talked about designing with the SA tool Hypothes.is in their synchronous and asynchronous online courses. Instructors spoke about planning for student participation, discussion, and engagement in an undergraduate online course in a way that encourages students to come back to the annotation platform, Hypothes.is. Cedar shared,

> *It [social annotation] can lend itself to a similar thing you see in a discussion board where you give students a question, and they respond. Here, they skim the text, find a paragraph, say it is interesting, pick a reply at random, and finish the activity. So, how are you evaluating [and designing] for their complete understanding?* [Interview 2, March 13th, 2023]

Instructors go beyond the discussion board approach in the kind of prompts and questions they provide for students to annotate and respond, which brings out skills like active reading, critical thinking, and evaluation instead of merely answering questions.

**Using guiding prompts and questions.** All five instructors provided guiding prompts, facilitating student discussions on the SA tool. They emphasized the importance of giving these prompts and how they are designed for student participation, responding to peers, and returning to the course content. Three instructors shared that their prompt questions ask students to connect their annotated readings with the previous week's content or compare it to their real-life experiences. Aspen says,

> *If we are learning about arguments of evaluation, I'll ask them for something we are currently doing, and then I'll ask them to make connections to previous chapters. I'll remind them of some things they might know- what evaluative argument is the author making? How do you think you would evaluate this in your own life?* [Interview 2, March 17th, 2023]

Aurora also has a similar approach that guides student participation by integrating course content with other course topics. This strategy encourages students to read, think critically, and evaluate the text while annotating; "It causes them to go back and review the one I led up to because it takes time to develop their reading skills."

Cedar's guiding prompts connect student annotations to their real-life experiences. He wants students to engage with the course content, share personal meaning and relevance, and focus on how their perspectives changed or differed. He doesn't provide a lot of prompts, except for a few questions for students to dive off, and leaves the annotation space open for organic student conversations. On the other hand, Clay's prompts and questions are very elaborate as they provide specific ideas for students to focus on; "I contextualize social annotation and active reading. I tell them that annotating this text in our writing community is collaborative reading, thinking, and questioning by marking a text together." His requirements are not heavy-handed for an undergraduate course, and he asks students to mark and annotate aspects that emerge for them. His prompts support students who need help with active reading and writing.

**Connecting social annotation with other activities.** Instructors discussed their designs beyond the annotate and reply format to ensure better student participation. River discussed how some of her students who annotate early get responses from their peers, but others who annotate later in the week seldom get any. She mentioned that not getting responses from peers can discourage students and affect their motivation to engage in discussions actively. One of the ways River addressed this was by sharing student annotations on Twitter, which she uses as another learning tool for the course:

> *I ask students to share annotations [of themselves and their peers] on Twitter. I also share some annotations on Twitter and ask them to have a Twitter discussion based on the annotations. I encourage them to make annotations on Hypothes.is, share others' annotations on Twitter, summarize them, and use them in their reflection posts. They can go back to the annotations, review them, and write a reflective summary.* [Interview 2, March 14th, 2023]

River added that connecting social annotation tools with Twitter and blogs has helped her scaffold students to go back and review annotations and discussions they may have missed. “I share interesting annotations on Twitter because it is amazing to see different perspectives of students about the topic. But from now on, I want to ask students to do this- it is a lot of work for me, and I want them to spend more time on Hypothes.is.” Sharing interesting annotations on Twitter also motivates students to participate in another platform, and they enjoy making connections on two different platforms.

Aurora discussed her designs for integrating social annotation activities with other course assignments. She shared that her individual writing reflection activities embed students’ weekly annotation activities. She has three major writing reflection activities during the semester and asks students to “come up with six annotations of their own or from others, that they could cite and write down. The next part was grouping them into three or more groups and labeling them.” Students analyze why the annotations they grouped fit together and summarize their reflections in a paragraph about the topic.

> *The writing reflection after the annotation activities: I wanted them to come to an understanding [about a course topic]. It's Like giving them an exam without giving them an exam. The question was, what is Diaspora? They had to develop six annotations of their own or others that they could cite and write. The next part was grouping them into three groups, labeling them, and writing about why they belong together.* [Interview 2, March 8th, 2023]

Aurora added that these summaries and reviews refine student analysis and writing skills and bring out any more questions they might have about the issues, the arguments or claims they are making in the synthesis, and how she can work with student understanding.

Clay also shared that he encourages students to quote and refer to student annotations in their synthesis papers. His design and implementation focus on helping students practice citing peers' annotations and how to use them to connect to their argument.

Instructors who teach asynchronous courses discussed that having a space where students can have conversations and questions and synthesize their knowledge construction after annotations would be helpful. They, however, mentioned that they are designing to strike a balance between creating different experiences in different modalities; "I have been wrestling with the idea that an asynchronous class cannot be synchronous. They get a different experience, and I am constantly thinking about it. There are things I cannot replicate". (Aspen, Interview 2)

Instructors also elaborate on how to curate their activities to scaffold student participation in the annotation space and beyond without increasing student workload. Providing overviews of student annotations, individual writing assignments using SA activities, and designing staggered deadlines for students to annotate text and come back a few days later to respond to peers are some ways that all instructors use to bring students back to the SA tool in an asynchronous modality.

**Assessment for Participation**. One of the recurring ideas in the instructor interviews was related to their evaluation of student annotations. All five instructors do not have a formal rubric to assess student participation and grade for completion of the required number of annotations. However, all instructors focus on the type and quality of individual annotations and peer responses. River shared that she grades students for completing requirements but requires replies and emphasizes the importance of SA as a conversation with peers and not highlighting and talking about excerpts from the text. Instructors also facilitate student participation by setting a higher grade percentage for responding to peers. Aspen's assessment design involves four out

of eight points, or 50% of the grade set, for responding to one peer's annotation. She elaborated, "It is not a formal rubric, but what matters most to me is that they engage with each other." Students in Aurora's class develop an informal rubric early in the course for effective annotations and use it as a reference for their SA activities.

Cedar's assessment strikes a balance between requirements for annotation and student workload. He requires students to make a significant annotation and reply, with at least 280 characters, and not a one-word response. He shows examples of student annotations from past courses to model examples of good annotation. He encourages students to be specific with their annotations and think deeper and critically about the topic.

> *Mostly, students are diligent about providing lengthy, interesting contributions to the dialogue. For the students who reply with something short or unrelated, it is reflected in their grade for that week, and I send feedback. Next time, I ask them to mention a connection and cite a source.* [Interview 2, March 13th, 2023]

Of all the instructors I interviewed, Clay is the only one who doesn't give a grade for any course activities, including SA. They shared that their focus is relational communication and sharing perspectives among students. Clay shared, "There was a little discomfort [from students] about not getting grades individually, the fears subside two or three weeks into the course, and students are interacting with each other better, they improve their writing and how they think about it" (Interview 2).

**Theme 4: Striking a balance between facilitation and participation as an instructor.**

Instructors discussed their role in facilitating student conversations and discussions using the SA tool. For example, River shared, "I think the best role instructors can take is to be a facilitator and not jump too much [into student conversations]." They shared that while they

don't participate in the SA discussions as often as they like to, they sometimes respond to student annotations. Their facilitation to enhance student participation included strategies like providing prompt questions, giving specific roles for students to lead their discussion, small group discussions, and features like tags. Instructors shared that their participation and responses to student annotations should focus on when and how to respond in a way that moves student discussion forward. Instructors also discussed that they need help to dedicate time to respond to annotations and questions while striking a balance and not taking the autonomy from students leading conversations. River mentioned that she checks students' annotations once or twice during the week and joins the discussion when she can. She also discussed that she pushes the conversation among the students but prefers to avoid involving too much to take up their learning space and drive away the discussion from them. River added that the timing of instructor participation is more important than the frequency of responding to students. She said the best way to engage students by participating *"*is to be a facilitator by proposing good questions from your students' annotations."

Cedar indicated that he doesn't participate in the annotation activities as much as he'd like but provides them individual feedback about their annotations while grading. He also discussed that he checks the annotations often, responds to any student questions, writes to them via email, and encourages them to participate more if he finds students' annotations inadequate. Students are "pretty diligent about providing lengthy and interesting contributions" in their annotations, but replies can often be short or unrelated. So, he designed the activity for students to mention a connection to their life and find something in a peer's response that they agree or disagree with.

Aurora discussed that she used to have a TA who would respond to student annotations and guide the participation effectively. She no longer has one, so she reviews student annotations and responds to a few each week. Finally, Aspen sometimes participates in student annotation activities and wonders if she concludes them by answering questions or having them engage more with the given idea. One of the interesting points that she discussed is how only some get a response or feedback to their annotation or a question. She mentioned that she might not have an answer or feedback to their questions immediately, but she touches on them at some point or lays the background for other course topics.

**Theme 5: Instructors' design and pedagogy continue to evolve with the use of SA.**

*"I cannot imagine not teaching without social annotation. It makes me a better teacher."*

[Aurora, Interview 2, March 8th, 2023]

During the interviews, instructors addressed the changes they have noticed in their pedagogy since implementing online courses with SA. They also shared how they want to continue growing and improving their design and pedagogy using SA tools for their online courses. Instructors who teach asynchronous courses discussed the affordance of having a space for learners to return and continue the discussions they started on Hypothes.is. While they agree that the designs cannot be the same for both modalities, they want to improve their course designs and embed annotation activities better.

River mentioned how she began thinking more about her asynchronous course design, using SA better, and responding to annotations:

*Having a synchronous online meeting with people talking about their annotations is necessary. They can discuss how it could apply to their writing and what they would*

*share with others. I think about how to use annotation text as class material. Because it is a challenge in asynchronous online spaces.* [Interview 2, March 14th, 2023]

She also talked about how her teaching theory continues to evolve with every course and how she tries harder to structure SA activities to engage students better. She added, *"*I became more active with teaching. I spend more time reading student annotations and summarizing perspectives. I am more involved; simultaneously, I leave space for them to learn independently*."*

River wants to connect different online technologies and collaborative learning spaces with SA to develop richer learning experiences. She aims to improve her design to engage students using Hypothes.is tag features better, asking them to summarize or compile similar points and share them on Twitter or their writing reflections. She also talked about encouraging students to use tag features better in student annotations. Aurora elaborated more on not using the tag features in her classes; "I realize how important tags could be, and I have never done them justice. I wasn't pushing them to tag when I noticed they didn't." She mentioned designing better with tags and using different roles for students to annotate course text. She also discussed changing structures for accessibility by having students make more minor annotations and providing feedback individually to those who need more scaffolding.

Aspen indicated that social annotation helped her be more creative and better scaffold her class. She values that and aims to explore using SA better. She talked about how her silent discussions work very well in a synchronous Zoom class, where students take 12 minutes in small groups to go back to that week's annotations and ask and answer questions. However, in her asynchronous section, she finds it difficult to bring students back to the annotation space:

> I *dislike that people can post on Tuesday, and if someone has asked them a question, they can answer it, be done, and never return. I want them to take the step to come back on Thursday and see what everyone else has said, and that is the sticking point in asynchronous learning for me that I haven't been able to figure out right*. [Interview 2, March 17th, 2023]

Cedar also discussed how he started using SA to include more situated and collaborative reading experiences for his students. However, he continued to evolve as a designer and a pedagogue to improve SA activities that enrich learning experiences. He plans to design better small-group annotations and have groups of students annotate different parts of a course article and present it back to the class. He also discussed using Natural Language Processing models and AI for social annotation and using them to provide detailed feedback for student annotations or help them answer questions. Clay had a similar perspective about explicitly integrating SA and having them draw more from these activities. They discussed effectively integrating social annotation into their curriculum better beyond using it as a "collaborative reading and annotating" activity before class. He added

> *I am not integrating it as explicitly and thoroughly as I could for them. They probably still see it as another thing they've got to do [for class], which is not how I want them to think about it. What should I do to make social annotations more substantial and fulfilling in class?"* [Interview 2, March 13th, 2023]

Cedar ended his interview by adding that SA and its integration should be discussed more as educational technologies. He would like to explore and learn more about SA if the university had a Community of Practice.

## Chapter Summary

This qualitative descriptive case study aimed to explore how and why instructors use social annotation in their undergraduate online courses. This chapter discussed thematic analysis from the instructor interviews that answered the three research questions: Why are instructors using social annotation in their undergraduate online courses? How are instructors designing their online courses with social annotation? What are instructors' participatory pedagogies concerning their use of social annotation tools? Notably, while all five focal instructors teach different subjects and have varying degrees of teaching experiences and teaching philosophies, during the conversations with them and analysis of the interview transcripts, they shared commonalities in their reasons for using social annotation and their design and implementation methods. The next chapter, Chapter 6, connects the findings and themes to existing literature and provides recommendations for future research.

# CHAPTER 6: DISCUSSION AND IMPLICATIONS

The role of social annotation tools in enhancing student learning processes and outcomes in online and hybrid learning has been studied extensively (e.g., Adams & Wilson, 2020; Novak et al., 2012); however, very little of this research has delved into instructors' pedagogies and design processes with SA tools. Scholars have cited the need for more research to understand *how* and *why* instructors use SA in their courses (Ghadirian et al., 2018; Schneider et al., 2016). Therefore, this dissertation aims to address this gap in the literature and was guided by these research questions:

1. Why are instructors using SA in their UG online courses?
2. How do instructors design and implement activities with SA?

3. What are instructors' participatory pedagogies in implementing SA in their UG online courses?

This final chapter will summarize the findings of my study, answer its research questions, discuss how the findings support current literature, identify implications, and provide recommendations and future research directions for researchers and practitioners.

**Summary of Dissertation Research**

The participants in this dissertation were five instructors who teach online undergraduate courses at a midwestern university. The criteria for selecting participants were that they had taught entirely online courses for at least one year and used any social annotation tools the semester before or during the study. The findings consist of detailed case descriptions of each of these instructors' experiences using SA and five common themes about how they design and implement social annotation tools in their online courses:

- Authentic conversations and a learning community are essential to facilitating an online course.
- Social annotation encourages meaningful dialogue and critique among students and makes their knowledge construction and sharing visible.
- Designing for student participation in SA goes beyond "annotate and reply".
- Striking a balance between facilitation and involvement as an instructor and
- Instructors' design and pedagogy continue to evolve with the use of SA.

The following sections discuss the study's findings related to the research questions. The results are supported by current research and social constructivist and sociocultural theories, which were the theoretical frameworks for the study.

**Discussion of Findings and Connections to Prior Research**

The findings of this study, the detailed descriptions of the instructors' course designs, and the thematic analysis of the instructor interviews support the existing literature on how social annotation tools enhance aspects like collaborative learning, online learning community, and visibility of student perspectives. The findings also underscore significant tenets from the theoretical frameworks of this study, drawn from social constructivism and sociocultural theory.

***RQ1. Why are instructors using SA in their UG online courses?***

Analysis from the primary data sources revealed several reasons for using SA, mirrored in the research discussed in Chapter 2. In conjunction with their different modalities, learning contexts, and course objectives, instructors described why they started using SA in their UG online courses. Some themes from the analysis of instructor interviews, course LMS, social annotation and syllabus walk-through, researcher memos, and jottings are discussed below, along with how they connect to prior research.

**Authentic discussions on a social annotation platform.** The instructors in this study use social annotation tools to support students' ongoing learning process through active reading and discussion with peers, which supports social learning theories. Social learning theories posit that using different instructional technologies and online tools supports learners in articulating and sharing their perspectives with peers through authentic discussions (Jonassen, 2000). Research also emphasizes the importance of collaboration and learner interaction, which helps construct knowledge and meaning making (Chametzky, 2014). The instructors' use of social annotation for authentic online discussions among learner-content-instructors also reflects the elements of social constructivism and sociocultural theory. Engaging students in authentic and collaborative learning activities that encourage them to participate in discussions is vital in online constructivist learning environments (Martens et al., 2007).

Aspen shared that threaded discussion boards in an online environment have yet to help her facilitate effective online participation among students. Her decision to transition to SA for her online courses was motivated by the need to design and facilitate authentic discussions. Cedar's thoughts are similar, as he discussed how SA is a structured and contextual space for discussions instead of students writing long posts on discussion boards that vaguely fit the prompt. River and Aurora firmly established the importance of active reading and peer discussion, where students have organic conversations based on the course topics.

These findings align with studies conducted by Gao (2013) and Sun & Gao (2017), who shared that SA effectively engages learners in collaborative reading and discussions for specific parts of the text and has a focused discussion around it. These studies also shared how the structure of SA supports student participation by focusing on specific parts of the course text, reading, and responding to related comments from peers. Sun and Gao (2017) summarized that threaded discussion boards are helpful for summative, synthesized reflections, while SA supports contextual, formative, and active discussion. Similarly, the other instructors in this study also mentioned using SA for what earlier studies deemed effective: online collaborative learning, shared contextual space for interaction, and meaning making (Kalir, 2020; Zarzour & Sellami, 2016, 2018).

**Building an online learner community through social annotation.** One of the primary reasons instructors in this study used SA was to help build community in their online classes. For example, Clay discussed how students share emotions about the topics, respect, and interest in each other's perspectives in their discussions on SA tools, which helps them build relationships with each other. River also uses a similar approach,

*"As a teacher, I can see that Hypothes.is really builds the class community, although students do not see each other face to face. They still have strong interactions and discussions on controversial topics and share opinions"* [Interview 2, March 14, 2023].

This finding is supported by Adams and Wilson (2020), who identified a significant increase in text and peer-to-peer interaction on their SA tool Perusall over a semester, indicating community growth. Other researchers also reiterate that using SA helps understand student thinking in the learning context, similar to a face-to-face environment (Chan &Pow, 2020; Plevinski et al., 2017).

When designing for collaborative discussions in an SA platform, instructors need to ensure that learners can engage with each other meaningfully in an online learning community (Vrasidas, 2000). Social constructivist pedagogies highlight the importance of creating learning communities in online environments that facilitate discussion and collaboration (Anderson & Dron, 2011; Carwile, 2007). Cardullo et al. (2018) also elaborate that an online tool or platform is only effective when the instructor embeds its use with meaningful content, pedagogy, and an adaptive approach to teaching.

**Student perspectives, disagreement, and critique are visible**. Another theme from the analysis is that instructors use SA to bring out student perspectives. Four out of five focal instructors mentioned that students taking, sharing, and challenging each other's perspectives was one of their course's learning objectives. One of Aurora's goals for her students is to "share their knowledge and perspectives on what we are talking about." Her objective for using SA in online courses included "students from different backgrounds and cultures come to the university. Sharing their ways of approaching reading can help them become aware of how they can learn with and from each other" [Interview 2, March 8th, 2023].

Aspen and River shared a similar perspective and mentioned that they saw evidence of students using their peers' annotations to move or shift their perspectives about a topic. Constructivist learning environments encourage promoting learner perspectives in different contexts and using multiple ways of solving problems and sharing solutions (Vrasidas, 2000).

These findings echo earlier research on how SA helped students become more reflective and critical during argumentative reading (Greenhow et al., 2009; Lebow et al., 2011). Yang et al. (2011) also found that students asked more questions and shared better answers when they used the social annotation tool, PAMS, to read and annotate. Similar to the findings of this dissertation, Erylmaz et al. (2013) also found that student discussions significantly improved with the use of an SA tool. Students expressed complex ideas, created, and shared new ideas, and recognized flaws in each other's reasoning, which the instructors also expressed in this thesis's findings. This study found that when instructors intentionally design the course learning objectives using social annotation, it maximizes student participation and learning outcomes.

***RQ2 + RQ3. How do instructors design and implement activities with SA? What are instructors' participatory pedagogies in facilitating online courses with social annotation tools?***

The second and third research questions for this study sought to understand how instructors design different activities with SA and how they implement them. Social annotation activities, LMS walk-throughs, and instructor interviews indicated that the designs and implementations of SA vary for synchronous and asynchronous course designs. While some aspects remained common for both modalities, others, like synchronous annotations and individual reflections, differed.

**Using guiding prompts and questions**. One of the central tenets of social learning theories is viewing the instructor's role as a facilitator (King, 1993). Schell and Janicki (2013) stated that the role of an instructor in an online environment is to provide prompts and questions that help navigate student thinking. The five focal instructors' interviews revealed the common practice of providing prompts and questions to facilitate student participation in the SA platform. Clay discussed how they provide guiding prompts and questions as a foundation for students to start from; "I provide some context - why are we doing this? Why are we reading this? What emotions swim through you as you read this article?" Clay also elaborated that having an SA tool is valuable for students because it helps them realize they are not alone in thinking a certain way or sharing with others. Cedar shared that he provides guiding prompts for individual annotations and peer responses while allowing students to find excerpts from course text relevant to their lives. He said, "I ask them to go through and find a comment [peer's annotation] that they agree or disagree with. This ensures that everybody gets at least one reply and at least replies to one person."

This finding aligns with researchers' argument about the type of guidance instructors should provide in collaborative online learning environments. In facilitating discussions, the instructor should steer the discussion by providing guiding questions that help students probe deeper into the course topics and evaluate their thought processes critically (Maloch, 2002; Mosenthal et al., 2004). Wright et al. (2013) supported these arguments by indicating the importance of the instructor's role as a facilitator in understanding and supporting student learning. They also shared that instructors could create a practical, student-centered approach in an SA environment by guiding learner participation and encouraging them to ask and answer questions.

**Going beyond the "Annotate and Reply" format.** In their synchronous classes, Aspen, Aurora, and Clay all provide a few minutes of their online class time for students to go back to the annotated text, review peer responses, and respond to them. This practice is an effort to get students to engage more with the annotations, moving beyond the "annotate and reply" to read, reply, and repeat. For example, Aspen described her design of a synchronous, silent discussion with annotations in the online class:

> *I have a silent discussion where we do a waterfall chat. I give them time to see all the questions. Choose one that they want to respond to and reply. People are more willing to disagree quietly when their body is not on the line. This also lets me help reduce access barriers to people who would not communicate in the class otherwise.* [Interview 2, March 17th, 2023]

Clay has a similar approach where he asks students to meet in small groups on Zoom, find their peers' interesting annotations, and share them with the whole class. This practice by these instructors encourages students to engage in discussions and reflect on each other's perspectives while fostering open communication (Gold, 2001). d'Entremont and Eyking (2021) discussed a significant increase in student annotations on Perusall compared to in-class discussions and linked it to SA's anonymity. These scholars also shared how speaking in class is considered a high-stakes activity compared to annotating anonymously. Aspen's synchronous annotation particularly illustrates these findings, where students critique and disagree with each other without worrying about giving the correct answer or being judged for their responses.

Another pedagogical strategy instructors use with social annotation is providing different roles to students as they annotate weekly course readings in small groups. For example, in Aurora's course, the facilitator guides the student conversation in Hypothes.is by assigning

different roles to students (e.g., the synthesizer compiles ideas from student annotations, and the summarizer presents the summary of the annotation discussion to the synchronous class). This design is based on the scaffolding framework for online discussion with social annotation, described by Zhu et al. (2020). The authors refer to it as the participation roles strategy that helps connect small group annotations with class collaborations and individual reflections.

Three instructors who teach online asynchronous courses shared that a challenge is the lack of synchronous course components that may help shift students past "annotation and reply. For example, River mentioned,

> *Getting everyone to talk about their annotation is challenging. It is necessary to have a synchronous or online meeting with people to discuss their annotations. They [students] have to discuss how to apply annotations to their writing and what they would share with others. I am considering using annotation text as class material.* [Interview 2, March 14, 2023]

Cedar is also considering including a synchronous component along with SA to ensure students engage well with the article and go beyond making an annotation or two. Despite this challenge, the instructors intentionally designed asynchronous activities for students to review and reflect on weekly annotations. River asked students to write a weekly individual reflection activity where she encouraged students to cite annotations from that week's SA activity. She also provides a concept map of student annotations on Twitter or via email. Aspen shared a similar design in her asynchronous course section, where she summarized student annotations in the following week's overview video. These designs are consistent with findings from earlier research on the importance of the instructor providing a summary of course topics (e.g., Graham et al., 2001). In an SA study by Schneider et al. (2016), instructors teaching with the tool Lacuna

shared similar perspectives on how visible student annotations helped them prepare for the class by reviewing student annotations and identifying themes and points they wanted to address, summarize, and clarify.

**Assessment for Participation.** Constructivist pedagogies in online environments discuss the importance of effective instructor feedback and assessments that encourage students to participate in course-related activities (Hienze et al., 2007). All five instructors in this study use staggered deadlines to guide student participation by giving separate deadlines for individual annotations and to read and respond to their peers. Aspen and Aurora give more points for responding to their peers, and all instructors encourage students to make substantial responses to their peers by asking questions, sharing something relevant, or critiquing their perspectives. These findings connect to earlier studies on the importance of instructors reinforcing learner interaction through precise specifications for assessment, including setting a higher percentage of the grade to online discussion activities (Auyeung, 2004; Maor & Hendricks, 2001). Aspen's design and practice of syllabus annotation with students during the first week of the course was studied by Kalir (2019), where the author stressed the importance of turning the syllabus into an open, live document where students can co-design the course with the instructors and discuss learning activities collaboratively.

Cedar and River discussed that they provide individual feedback to their students while grading their SA activities and scaffold and support those who need guidance responding substantially to peers. These findings are consistent with the research on providing prompt feedback and encouraging students towards better participation (Morris & Finnegan, 2008). Studies that delve into the role of assessment and feedback using social annotation also identified the effectiveness of constructive and interactive feedback from instructors. Yeh and Lo (2009)

discussed providing feedback to learners by addressing areas that need improvement through constructive, interactive, and error-correction methods. In two studies by Lin and Lai (2013) that explored an approach similar to Clay's in this dissertation, instructors developed an annotation system that gave learners feedback instead of giving them grades. They designed for continuous formative assessments using collaborative annotations to improve student participation and performance on summative assessments. While not many studies discussed the role of participation-based assessment in social annotation, providing effective, timely, and constructive feedback for students has been consistently studied and discussed (e.g., Yeh & Lo, 2009; Yeh et al., 2014).

**Facilitating learner participation.** Prior research shared that instructors should create learning environments that allow for a flow of ideas among students where they can share diverse perspectives, challenge, and change their beliefs, and move their thinking (Farkas, 2011). All five instructors in this study use guiding prompts and questions to facilitate student conversations on the SA platform. The types of prompts used by instructors in this study included commenting on specific aspects of the text, connecting it to their life experiences, and asking or answering peers' questions. They also provided summaries of student annotations, implemented synchronous annotation discussions, and gave individual reflection activities that weave into SA activities.

These strategies are also considered effective in prior studies in online design and pedagogy (Roper, 2007). A few studies on social annotation have emphasized the role of instructors as a facilitator to guide learner participation. Wright et al. (2013) discussed how instructors should guide student discussion by posing questions and encouraging them to ask and respond to peers more. Another significant study by Schneider et al. (2016) elaborated on

instructors' role in facilitating student participation. Instructors in this study shared the importance of designing for student participation in the SA tool, their increased engagement to facilitate student discussions, and identifying and scaffolding for areas where students struggled with comprehension. Schneider et al. (2016) also found similar themes as this thesis – increased time and engagement from instructors to design and implement SA activities, reviewing and facilitating student conversations, and bringing themes from annotations back to the class for further discussion and summary.

**Instructor participation in annotation activities**. The instructors in this study used multiple, effective pedagogies for online discussions using SA, which included providing proper feedback, facilitating, and participating in discussions along with students, which support a dialogic and participatory pedagogy (DePietro, 2013; Kumpulainen et al., 2009; Hogan & McKnight, 2007; Morris & Finnegan, 2008)

All five focal instructors expressed that they would like to participate in the SA activities more than they do. While they checked student annotations, responded to questions, and provided individual feedback, they all shared the need for more time so they could participate differently. River's time and the quality of participation focus on guiding student conversations on the SA platform and providing feedback. Aspen and Aurora respond to a few annotations each week, and their participation is majorly focused on the synchronous Zoom discussions where students talk more about each other's annotations. Clay's participation is limited, but he is also actively involved in synchronous Zoom discussions and reaches out to support individual students. This need for more time is documented in existing research, including Schneider et al. (2016) and Clapp et al. (2021) studies that identify how instructor participation in SA activities was only possible with the help of a teaching assistant, which was also discussed in this thesis.

Prior research found (Dennen, 2005; Mazzolini & Madison, 2003) that the threshold of instructor participation is crucial to lead students to participate more and develop their thinking without overwhelming or discouraging student participation. This aligns with River's thoughts on the time and quality of instructor participation in being able to strike a balance with participation.

## Implications for Research and Practice

In addition to the design and pedagogical affordances of social annotation, the instructors shared additional insights on what intrigued them about using SA in undergraduate online courses. A few unique contributions of this dissertation extend the scholarship on social annotation in higher education as they provide directions for further research and practice.

### *From Using to Integrating Social Annotation Tools*

The research questions themselves, and most of the responses from instructors used the term "using" social annotation tools in their online courses. Instructors' reasons for using SA included having a platform for authentic student discussions, making visible student perspectives, and creating an online learning community. All five instructors designed social annotation as one of the course activities for active reading and responding throughout the week for asynchronous courses and before synchronous class meetings. Most research studies on social annotation in online learning discussed a similar design and pedagogical approach (reading and annotating asynchronously or before the synchronous class meeting) (e.g., Adams et al., 2022; Kalir., 2020). It was interesting to note that while the instructors I spoke to enjoy the affordances of SA, they did not want SA to become akin to an asynchronous discussion board eventually.

For example, one instructor, River, wanted to go beyond the Read.Annotate.Respond design and intentionally integrated social annotation activities with other learning technologies she used for the course activities. She also shared student annotations and responses on Twitter and encouraged students to cite annotations in their reflection blogs and Twitter discussions. She compiled interesting annotations and summaries of student tags and provided weekly overviews of student ideas. River's integration of social annotation with Twitter and Blog writing extends student participation and helps keep them motivated to participate in student discussions. While most SA studies use SA as a pre-class activity for knowledge construction and sharing, combining it with other social media tools that students actively engage in can create more agency for students in leading their discussions. The division of student discussions into multiple platforms also provides space for a more informal setting, and students can connect ideas from one platform to another.

Instructor integration of social annotation with other learning technologies they use in their classes can be explored further. Connecting to multiple online platforms provides students with a richer learning experience and engages them more authentically, particularly in an asynchronous environment. Research and practice can continue to explore instructors' design and pedagogical approaches and their presence in social annotation and other discussion platforms to understand their processes. Frameworks like Community of Inquiry (Garrison, 2000) can be used to understand instructor presence and instructor social presence in SA spaces and how instructors perceive their roles in facilitating and making annotations with students, along with connecting annotation discussions to blogs or tweets. Of course, this also leads to the possibility of further exploring the time, energy, and effort instructors put in weekly while using SA and how it relates to student learning outcomes.

### *Student-Designed Rubrics*

All five instructors talked about grading and assessment and using strategies such as staggered deadlines and a higher percentage of grades for peer responses. Instructors in this study indicated that these strategies directed students' focus more on participation, being interested in each other's perspectives, and critiquing and disagreeing with them. They also encouraged students to make substantial annotations by modeling or guiding students through prompts or participating in annotations. While these approaches have been supported by studies on social annotation and online learning, some design approaches in this study take the research and practice further.

Aurora, one of the instructors I interviewed, uses social annotation as a reading and annotating activity every week before students meet for their Zoom class. Early in the semester, she asks students during the Zoom class to get in small groups, go over annotations made by everyone, and find and share a few of them that they find interesting. Using her guiding questions, students create an informal rubric in class that assesses their annotations from the following weeks. Aurora also encourages students to read each other's annotations consciously with the rubric in mind and give feedback to each other accordingly. Aurora added that she does not ask students to share ineffective annotations. She also mentioned that students often think critically about their own and their peers' annotations when creating the rubric categories. She believes this motivates students to go back and reflect on their annotations and think about what they have written and how to improve their writing:

> *How did my peers do that? How can I deepen my understanding? There is something to be said; even if no one talked about my annotation, that is still okay. Invisibility allows you to escape but still work on another annotation activity where, hopefully, you can gain*

*skills without the same or being at the risk of making a mistake.* [Interview 2, March 8th, 2023]

This interview excerpt summarizes the idea of centering and directing the discussion more around students and giving them the opportunity and power to learn to annotate from each other.

A significant part of social annotation research is focused on students and their experiences using SA tools to read and annotate. However, instructors base assessment and feedback designs on what they, not the students, consider substantial or compelling. Studies have used social annotation tools to provide feedback for error correction in language learning (Lin & Lai, 2009), but students have yet to be at the center of designing their rubrics. Future research that explores how students associate SA with their active reading and writing processes and how they think critically about their annotations and their peers will help us better understand student learning processes. Research in this area can also explore what students consider critical to their learning, where they need instructor support and scaffolding, and how they connect their learning to their peers.

***Facilitating Student Participation Without a Grade Incentive***

Social annotation tools have been designed and used in online courses mainly for collaborative learning and student engagement. Instructors in this study talked about the heterogeneity in undergraduate student motivation, particularly related to participation and discussion. While some students are motivated by a grade, others participate actively in discussions and share in-depth perspectives. Some instructors in this study shared that they incentivized student participation by setting a higher percentage of the grade for student responses to peers' annotations. One instructor talked about the no-grade method he

implemented in his course. Clay teaches first-year writing to undergraduate students and shared that he does not give any grade except for the final course grade. They explained this strategy; “I spend much time with students in conferences throughout the semester. I have a small size and the capacity to meet with them individually, frequently, and throughout the semester, and I talk to them about it.”

Clay mentioned that his pedagogy is focused on flexibility, discussion, and feedback and taking students' voices and choices in course design and implementation. He added that students do not automatically get an A in the course, but Clay will support them by working with them if they need to catch up. They shared that while students initially hesitate about the no-grade system, they get used to it and focus on activities better. Their annotation activities focus on reading and annotating course readings using Clay's guiding prompts and questions. They provide a lot of context and scaffolding related to what students must focus on while reading and responding to annotations. He emphasizes the emotions and communicates them to the highlighted text, not the product. This design is also evident in his annotation requirements, as their details focus mainly on prompt questions while leaving the number of annotations and responses to the students.

> *“When you have not mandated anything about replying to two or three people, you can see what pages captured student attention. Students initially build up [annotations] and keep reading [without annotating] later. I do not know if this signifies what was interesting, but where was the labor?”* [Interview 2, March 13th, 2023]

Clay’s smaller class size is one of the main reasons he can effectively facilitate an online discussion around social annotation while also reaching out to students who need more guidance to participate. Their design to keep the workload lighter compared to other courses students take

encourages students to view this as a safe space to talk, share perspectives, and build a community. Clay's consistent guidance, scaffolding, and facilitation encourage student participation, reiterating their agency and voice in the design and being flexible and available to work through their struggles.

It is important to reiterate what all the instructors in this study identified – designing for undergraduate students' continuous engagement in SA discussions in online classes can be challenging. Instructors' design to set a higher percentage of courses for participation is effective and helps them support student participation better. Designing online courses without the individual grade incentive can take different directions if implemented without consistent scaffolding, guidance, and instructor presence. Understanding student participation in social annotation can also help researchers understand instructor social presence to facilitate student discussions. Future studies can also dive into student groups in the SA space, cliques, response times, depth of annotations, and responses to peers using social network analysis and temporal analysis techniques.

### *Accessibility in Social Annotation*

All five instructors used the social annotation tool, Hypothes.is. Two of them talked about accessibility in social annotation, Aspen and Aurora. Aspen's design focuses on accessibility and Universal Design for Learning. One of the first things she discussed in her introductory interview was that Hypothes.is is a very well-designed tool for SA, but it is still behind in terms of accessibility. While screen readers seemingly work for Hypothes.is, many of Aspen's students had problems using them. Aspen's silent discussions are also a product of an accessibility design, allowing students to respond without putting them in the spot. She added that there is a lot to think about designing with accessibility for SA. Aurora also briefly talked

about accessibility and SA and designing activities beyond giving extra time to students who require accommodations. She mentioned that designing student annotations that are not too long makes it easier for everyone to read and reply. While these are the only two things shared in this study related to accessibility and SA, there is much to explore related to how inclusive collaborative reading and responding can be redesigned in online learning environments. Encouraging student participation by making it authentic and organic without enforcing it is essential. Research must explore how SA activities can be designed to be more inclusive and accessible and how student learning outcomes about participation can be created without forcing students to participate in SA activities for a grade.

Accessibility design in social annotation has massive potential for future design, research, and practice. Most studies on SA design focused on student experiences with SA tools and learning experiences. However, they have yet to delve into experiences with screen readers or motor issues for navigation. Instructors' implementation of SA activities also needs to weave in accessibility regarding how students are required to annotate and reply. Design and implementation in the future should also focus on encouraging student participation without forcing it for a grade. In addition, the reality is that in a course, some students get many responses to their annotations, others send many responses, and some students lurk and learn. A lot of SA design must be centered around student participation and discussion, but there is also a need to rework the understanding of mandatory visible participation regarding accessibility. Future studies can focus on restructuring student participation in SA and in other platforms with this focus.

### *Learning Analytics in Social Annotation*

Two instructors, River and Cedar, used an analytics tool called Chromewell to count student annotations. They discussed interest in using other learning analytics tools and dashboards to help them understand and facilitate student participation in Hypothes.is but expressed that they do not have the time to do so. Cedar wanted to try analytics that goes beyond student annotation counts and understand higher-order engagement and where and how students are struggling with participation and response.

Integrating learning analytics with social annotation is an impactful future research direction. Instructor-student-content interaction on an SA platform yields a vast, rich body of data that can be mined using machine learning, content analysis, and social network analysis methods. These can be explored to understand student interactions, the students who are most and least active in the SA space, students who need scaffolding to participate or respond, those who need guidance related to understanding course content, and more. With the increase in the use of generative artificial intelligence in both K-12 and higher education, studying social annotation with AI for providing student feedback for annotations and summaries of course texts can lead to exciting insights to improve design and practice.

### *Bringing Social Annotation into K-12 Environments*

Aurora shared that bringing social annotation, active reading, and writing into K-12 education is essential. She added that students in her undergraduate-level theater arts and dance courses are incredible at dance. However, she wants them to be more excited about reading and scholarship as university students. Nurturing and expanding students' reading and writing activities in middle and high school can help them prepare for college better. Studying the ongoing use of SA tools with young people who grew up with technology can potentially inform instructors’ designs and practices.

**Limitations of the Study**

This study has limitations that need to be recognized and addressed. One of the limitations is how I selected participants. I used a purposive sampling method, which included participant selection based on their in-depth knowledge of the phenomenon being studied (Patton, 1990). All the participants also represented humanities and social sciences contexts – no one from a STEM discipline existed. The perceptions, design, and pedagogical choices of faculty from STEM disciplines in using social annotation may differ from social sciences, which were not explored in this study.

Another limitation of this study is the need for additional data sources, such as gathering and analyzing instructor and student annotations, to help better triangulate instructors' participation. Due to all five instructors' minimal participation in annotation activities, I decided not to compile those activities to triangulate their annotations with their interview responses. However, analysis of instructors' annotations would have helped provide richer case descriptions and informed how the instructor's participation impacts student discussions on the SA tool. As an educator, I have extensively used social annotation tools in the undergraduate online courses I taught for at least five years, which initially motivated me to conduct this study. While my extensive personal experience is a strength I brought to this study, I simultaneously wanted to be cautious about projecting my personal preferences and ideas during the conversations with the instructors and narrowing my analysis. I followed Tracy's (2010) guidelines for conducting effective qualitative research to keep myself in check. I maintained detailed notes, audit trails, and research memos, providing me with structures and processes to facilitate openness and honesty during data collection and analysis. I also ensured that the interview protocols were piloted with two online instructors before the dissertation, allowing me to refine them.

**Recommendations for Institutional Support**

This study highlights the need to invest in and provide higher education instructors with training and professional development opportunities to support their use of social annotation in online courses, including developing their technical and Informational Technology (IT) know-how. Instructors should have the skills to design and implement engaging courses where learners actively annotate course text collaboratively with their peers. Many SA tools' features can be seamlessly integrated into LMS spaces and are affordable or have open access, so institutional adoption can greatly help motivate instructors to use SA. Post-secondary institutions can also help support instructors by minimizing the effort and time they need to invest in embedding SA tools in their courses. This can be done by understanding SA's value beyond mere integration and delving into the use of dashboards and learning analytics tools alongside SA tools that help instructors understand where their learners need support and scaffolding. Providing teaching assistants to instructors who can facilitate student participation in SA environments, instructional designers to guide them through design and pedagogical support, and IT and technical support to students struggling with challenges related to the SA spaces can all aid in seamlessly integrating SA tools.

Instructors should be supported in addressing the technical, design, and pedagogical challenges they face in designing and implementing SA tools in their online courses, including their instructor roles. Faculty should be provided with professional support to help them understand their roles as facilitators in guiding student participation on an SA platform and curating it to their learning contexts. Creating communities of practice where instructors can come together to discuss, collaborate, and share their processes and challenges related to the use of SA with each other can be very helpful. Communities of practice allow instructors to share

innovative designs and pedagogies to engage undergraduate (and graduate) students in active, collaborative reading, writing, and scholarship through SA.

With adequate support from institutions, instructors can work on how SA can be embedded in ways that meet course objectives and learning outcomes and how it can be integrated into course design and other activities and assignments. Participants in this study mentioned that they needed more support from their institution – they did not even know if and which colleagues within the university were using SA. The recommendations offered here are starting points for institutions as they figure out how to support instructors better using SA tools.

**Concluding Statements**

Social annotation tools have facilitated active reading, collaborative knowledge construction, and domain-specific learning in higher education environments. The findings from this study illustrated the importance of designing an online course with SA by situating it with learning objectives. Despite needing more institutional support to adopt SA tools, instructors individually learned and implemented them in their courses to enhance learning environments and make experiences richer for their students. Instructors provided guidance, scaffolding, and structure to student participation, allowing students to shape discussions, explore, and challenge perspectives through annotations. This study centralized the design and pedagogies of the teacher as essential factors in the use of SA in undergraduate online courses.

The findings of this study documented that the type of instructor prompts, instructor participation in the SA platform, and their assessment and feedback strategies influence student participation. With strong scaffolding from instructors, there is evidence of students challenging each other's perspectives, using peers' annotations to change and move their thinking along, and exhibiting rich, contextual dialogue around course topics. I hope this study illuminates what

teachers go through while designing and integrating new tools into their courses. While seeing improved student learning outcomes is exciting, it is essential to note instructors' labor- and time-intensive efforts when integrating new technological tools into their teaching and learning design and practices. We need to shift the focus on instructors, understand their needs, requirements, and processes, and shine a light on them and support their needs.

## REFERENCES


Adams, B., & Wilson, N. S. (2020). Building community in asynchronous online higher education courses through collaborative annotation. *Journal of Educational Technology Systems*, *49*(2), 250–261. https://doi.org/10.1177/0047239520946422

Adler, M. (1940). *How to read a book: The art of getting a liberal education*. Simon and Shuster Inc.

Altheide, D. L., & Johnson, J. M. (1994). *Criteria for assessing interpretive validity in qualitative research.* In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 485–499). Sage.

Anderson, B., & Simpson, M. (2004). Group and class contexts for learning and support online: Learning and affective support online in small group and class contexts. *International Review of Research in Open and Distributed Learning*, *5*(3), 1-15.

Anderson, S. (2011). What I really want is someone rolling around in the text. *The New York Times*, *4*(3).

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distributed Learning*, *12*(3), 80-97.

Ashcraft, D., & Treadwell, T. (2008). The social psychology of online collaborative learning: The good, the bad, and the awkward. In *Computer-supported collaborative learning: Best practices and principles for instructors* (pp. 140-163). IGI Global.

Auyeung, L. H. (2004). Building a collaborative online learning community: A case study in Hong Kong. *Journal of Educational Computing Research*, *31*(2), 119-136.

Bailey, C. J., & Card, K. A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. *The Internet and Higher Education*, *12*(3-4), 152-155.

Balkin, R. S., Buckner, D., Swartz, J., & Rao, S. (2005). Issues in classroom management in an interactive distance education course. *International Journal of Instructional Media*, *32*(4), 363-373.

Banna, J., Lin, M. F. G., Stewart, M., & Fialkowski, M. K. (2015). Interaction matters: Strategies to promote engaged learning in an online introductory nutrition course. *Journal of Online Learning and Teaching/MERLOT*, *11*(2), 249.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, *13*(4), 544-559.

Beach, R. (2012). Uses of digital tools and literacies in the English language arts classroom. *Research in the Schools*, *19*(1), 45.

Bereiter, C. (2002). Education in a knowledge society. *Liberal Education in a Knowledge Society*, 11-34.

Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. *Educational Researcher*, *13*(6), 4-16.

Blyth, C. (2014). Exploring the affordances of digital social reading for L2 literacy: The case of eComma. *Digital Literacies in Foreign and Second Language Education*, *12*, 201–226.

Bobish, G. (2011). Participation and pedagogy: Connecting the social web to ACRL learning outcomes. *The Journal of Academic Librarianship*, *37*(1), 54-63.

Bochner, A. P. (2000). Criteria against ourselves. *Qualitative Inquiry*, *6*(2), 266-272.

Brew, L. S. (2008). The role of student feedback in evaluating and revising a blended learning course. *The Internet and Higher Education*, *11*(2), 98-105.

Brown, M., McCormack, M., Reeves, J., Brook, D. C., Grajek, S., Alexander, B., Bali, M., Bulger, S., Dark, S., Engelbert, N., Gannon, K., Gauthier, A., Gibson, D., Gibson, R., Lundin, B., Veletsianos, G., & Weber, N. (2020). *2020 Educause Horizon Report Teaching and Learning Edition* (pp. 2–58). EDUCAUSE. https://www.learntechlib.org/p/215670/

Bruce, B. C., & Levin, J. A. (1997). Educational technology: Media for inquiry, communication, construction, and expression. *Journal of Educational Computing Research*, *17*(1), 79-102.

Bruner, J. (1999). Folk pedagogies. *Learners and Pedagogy*, *1*(1), 4-20.

Bruner, J. S. (1962). The conditions of creativity. In H. E. Gruber, G. Terrell, & M. Wertheimer (Eds.), *Contemporary approaches to creative thinking: A symposium held at the University of Colorado* (pp. 1–30). Atherton Press. https://doi.org/10.1037/13117-001

Cardullo, V. M., Wilson, N. S., & Zygouris-Coe, V. I. (2018). Enhanced student engagement through active learning and emerging technologies. *Student engagement and participation: Concepts, methodologies, tools, and applications*, 399-417.

Carwile, J. (2007). A constructivist approach to online teaching and learning. *Inquiry*, *12*(1), 68-73.

Cecchinato, G., & Foschi, L. C. (2020). Perusall: University learning-teaching innovation employing social annotation and machine learning. *Qwerty-Open and Interdisciplinary Journal of Technology, Culture and Education*, *15*(2), 45-67.

Chametzky, B. (2014). Andragogy and engagement in online learning: Tenets and solutions. *Creative Education*, *2014*.

Chan, J. W. W., & Pow, J. W. C. (2020). The role of social annotation in facilitating collaborative inquiry-based learning. *Computers and Education*, *147*, Article 103787. https://doi.org/10.1016/j.compedu.2019.103787

Chen, B., & Chen, Z. (2023). Why do students reply? Uncovering the socio-semantic entanglement in web annotation activities. *Education and Information Technologies*, 1-25.

Chen, C. M., & Chen, F. Y. (2014). Enhancing digital reading performance with a collaborative reading annotation system. *Computers & Education*, *77*, 67-81.

Chen, Y. J., & Willits, F. K. (1999). Dimensions of educational transactions in a videoconferencing learning environment. *American Journal of Distance Education*, *13*(1), 45-59.

Chickering, A. W., & Ehrmann, S. C. (1996). Implementing the seven principles: Technology as lever. *AAHE Bulletin*, 49(2), 3-6.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 3-7.

Clapp, J., DeCoursey, M., Lee, S. W. S., & Li, K. (2021). "Something fruitful for all of us": Social annotation as a signature pedagogy for literature education. *Arts and Humanities in Higher Education*, *20*(3), 295-319.

Clarke, A. J. (2021). Perusall: Social learning platform for reading and annotating (Perusall LLC, perusall. com). *Journal of Political Science Education*, *17*(1), 149-154.

Cohn, J. (2019). Talking back to texts: An introduction to putting the "social" in "social annotation." In *Marginalia in Modern Learning Contexts* (pp. 1-16). IGI Global.

Cole, M., & Packer, M. (2013). Culture in development. In *Social and Personality Development* (pp. 75-132). Psychology Press.

Coogle, C., & Floyd, K. (2015). Synchronous and asynchronous learning environments of rural graduate early childhood special educators utilizing Wimba© and Ecampus. *MERLOT Journal of Online Learning and Teaching*, *11*(2).

Cresswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research.* Sage.

Crews, T. B., Wilkinson, K., & Neill, J. K. (2015). Principles for good practice in undergraduate education: Effective online course design to assist students' success. *Journal of Online Learning and Teaching*, *11*(1), 87-103.

Croft, B., & Brown, M. (2020). Inclusive open education: presumptions, principles, and practices. *Distance Education*, *41*(2), 156-170.

d'Entremont, A. G., & Eyking, A. (2021). Student and instructor experience using collaborative annotation via Perusall in upper-year and graduate courses. *Proceedings of the Canadian Engineering Education Association (CEEA)*.

Dalziel, J. (Ed.). (2015). *Learning design: Conceptualizing a framework for teaching and learning online*. Routledge.

Dede, C. (1996). The evolution of distance education: Emerging technologies and distributed learning. *American Journal of Distance Education*, *10*(2), 4-36.

Dennen, V. P. (2005). From message posting to learning dialogues: Factors affecting learner participation in asynchronous discussion. *Distance Education*, *26*(1), 127-148.

Denzin, N.K. (1978). *Sociological methods: A sourcebook*. McGraw-Hill.

DePietro, P. (2013). Participatory pedagogy. *Counterpoints*, *435*, 37-46.

Desai, M. S., Hart, J., & Richards, T. C. (2008). E-learning: Paradigm shift in education. *Education*, *129*(2).

Devine, D., Fahie, D., & McGillicuddy, D. (2013). What is 'good' teaching? Teacher beliefs and practices about their teaching. *Irish Educational Studies*, *32*(1), 83-108.

Dewey, J. (2008). *The child and the curriculum, including the school and society*. Cosimo, Inc.

DiIorio, A., & Rossi, D. (2018). Capturing and managing knowledge using social software and semantic web technologies. *Information Sciences*, *432*, 1-21.

Dirette, D. P. (2014). Technological guidelines: The relationship between our expanding knowledge and our philosophical assumptions. *The Open Journal of Occupational Therapy*, *2*(2), 1.

Drucker, P. (2012). *Post-capitalist society*. Routledge.

Du, H. S., & Wagner, C. (2007). Learning with weblogs: Enhancing cognitive and social knowledge construction. *IEEE Transactions on Professional Communication*, *50*(1), 1-16.

Duffy, T. M., and Cunningham, D. J., (1996). Constructivism: Implications for the design and delivery of instruction, In D. H. Jonassen, (Ed.) *Handbook of research for educational communications and technology*, Macmillan Library Reference USA.

Eryilmaz, E., van der Pol, J., Ryan, T., Clark, P. M., & Mary, J. (2013). Enhancing student knowledge acquisition from online learning conversations. In *International Journal of Computer-Supported Collaborative Learning* (Vol. 8). https://doi.org/10.1007/s11412-012-9163-y

Farkas, M. (2012). Participatory technologies, pedagogy 2.0, and information literacy. *Library Hi Tech*, *30*(1), 82-94.

Fecho, B., & Botzakis, S. (2007). Feasts of becoming: Imagining a literacy classroom based on dialogic beliefs. *Journal of Adolescent & Adult Literacy*, *50*(7), 548–558.

Fleming, W. G. (1987). Student learning work: Grounds for an in-situ analysis. *Instructional Science*, *16*, 109-122.

Freire, P. (2020). Pedagogy of the oppressed. In *Toward a sociology of education* (pp. 374-386). Routledge.

Frey, B. A., & Alman, S. W. (2003). Applying adult learning theory to the online classroom. *New Horizons in Adult Education and Human Resource Development*, *17*(1), 4-12.

Gabriel, M. A., & Kaufield, K. J. (2008). Reciprocal mentorship: An effective support for online instructors. *Mentoring & Tutoring: Partnership in Learning*, *16*(3), 311-327.

Gagne, R. M., & Medsker, K. L. (1996). *The conditions of learning: Training applications.* Harcourt Brace.

Gao, F. (2013). A case study of using a social annotation tool to support collaboratively learning. *Internet & Higher Education*, *17*, 76–83. Education Source.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, *15*(1), 7–23.

Garrison, R. (2000). Theoretical challenges for distance education in the 21st century: A shift from structural to transactional issues. *International Review of Research in Open and Distributed Learning*, *1*(1), 1-17.

Gauvain, M., & Munroe, R. L. (2012). Cultural change, human activity, and cognitive development. *Human Development*, *55*(4), 205-228.

Gaytan, J., & McEwen, B. C. (2007). Effective online instructional and assessment strategies. *The American Journal of Distance Education*, *21*(3), 117-132.

Geertz, C. (1973). *The interpretation of cultures* (Vol. 5019). Basic books.

Gerring, J. (2004). What is a case study and what is it good for? *American Political Science Review*, *98*(2), 341-354.

Ghadirian, H., Salehi, K., & Ayub, A. F. M. (2018). Social annotation tools in higher education: A preliminary systematic review. *International Journal of Learning Technology*, *13*(2), 130–162. https://doi.org/10.1504/IJLT.2018.092096

Glazewski, K. D., & Hmelo-Silver, C. E. (2019). Scaffolding and supporting use of information for ambitious learning practices. *Information and Learning Sciences*, *120*(1/2), 39-58.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, *8*(4), 597-607.

Gold, S. (2001). A constructivist approach to online training for online teachers. *Journal of Asynchronous Learning Networks*, *5*(1), 35-57.

Graham, C., Cagiltay, K., Lim, B. R., Craner, J., & Duffy, T. M. (2001). Seven principles of effective teaching: A practical lens for evaluating online courses. *The Technology Source*, *30*(5), 50.

Grant, M. R., & Thornton, H. R. (2007). Best practices in undergraduate adult-centered online learning: Mechanisms for course design and delivery. *Journal of Online Learning and Teaching*, *3*(4), 346-356.

Gravett, S., & Petersen, N. (2002). Structuring dialogue with students via learning tasks. *Innovative Higher Education*, *26*, 281-29

Greenfield, P. M. (2009). Technology and informal education: What is taught, what is learned. *Science*, *323*(5910), 69-71.

Greenhow, C., Robelia, E., & Hughes, J. (2009). Web 2.0 and educational research: What path do we take now? *Educational Researcher*, *38*(4), 246-259.

Halic, O., Lee, D., Paulus, T., & Spence, M. (2010). To blog or not to blog: Student perceptions of blog effectiveness for learning in a college-level course. *The Internet and Higher Education*, *13*(4), 206-213.

Harasim, L. (2017). *Learning theory and online technologies*. Taylor & Francis.

Harry, B., Sturges, K. M., & Klingner, J. K. (2005). Mapping the process: An exemplar of process and challenge in grounded theory analysis. *Educational Researcher*, *34*(2), 3-13.

Heinze, A., Procter, C., & Scott, B. (2007). Use of conversation theory to underpin blended learning. *International Journal of Teaching and Case Studies*, *1*(1-2), 108-120.

Hernández-Leo, D., Asensio-Pérez, J. I., Derntl, M., Pozzi, F., Chacón, J., Prieto, L. P., & Persico, D. (2018). An integrated environment for learning design. *Frontiers in ICT*, *5*, 1-9.

Hogan, R. L., & McKnight, M. A. (2007). Exploring burnout among university online instructors: An initial investigation. *The Internet and Higher Education*, *10*(2), 117-124.

Holley, D., & Dobson, C. (2008). Encouraging student engagement in a blended learning environment: The use of contemporary learning spaces. *Learning, Media and Technology*, *33*(2), 139-150.

Huang, R. (2019). *Educational technology: A primer for the 21st century*. Springer Nature Singapore Pte Ltd.

Ingram, A. L., & Hathorn, L. G. (2004). Methods for analyzing collaboration in online communications. In *Online collaborative learning: Theory and practice* (pp. 215-241). IGI Global.

Jan, J.-C., Chen, C.-M., & Huang, P. H. (2016). Enhancement of digital reading performance by using a novel web-based collaborative reading annotation system with two quality

annotation filtering mechanisms. *International Journal of Human Computer Studies*, *86*, 81–93. https://doi.org/10.1016/j.ijhcs.2015.09.006

Januszewski, A., & Molenda, M. (Eds.). (2013). *Educational technology: A definition with commentary*. Routledge.

John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist*, *31*(3–4), 191–206.

Johnson, K. E. (2009). *Second language teacher education: A sociocultural perspective*. Routledge.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14-26.

Johnson, T. E., Archibald, T. N., & Tenenbaum, G. (2010). Individual and team annotation effects on students' reading comprehension, critical thinking, and meta-cognitive skills. *Computers in Human Behavior*, *26*(6), 1496-1507.

Jonassen, D. H. (1996). *Computers in the classroom: Mindtools for critical thinking*. Prentice-Hall, Inc.

Jonassen, D. H. (2000). Toward a design theory of problem-solving. *Educational Technology Research and Development*, *48*(4), 63-85.

Kalir, J. H. (2019). Open web annotation as collaborative learning. *First Monday*.

Kalir, J. H. (2020). Social annotation enabling collaboration for open learning. *Distance Education*, *41*(2), 245–260. https://doi.org/10.1080/01587919.2020.1757413

Kalir, J. H., & Perez, F. (2019). The marginal syllabus: Educator learning and web annotation across sociopolitical texts and contexts. In *Marginalia in modern learning contexts* (pp. 17-58). IGI Global.

Keeton, M. T. (2004). Best online instructional practices: Report of phase I of an ongoing study. *Journal of Asynchronous Learning Networks*, *8*(2), 75-100.

Kennedy, G. E., Judd, T. S., Churchward, A., Gray, K., & Krause, K. L. (2008). First-year students' experiences with technology: Are they really digital natives? *Australasian Journal of Educational Technology*, *24*(1).

King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, *41*(1), 30-35.

Knowles, M. (1990). *The adult learners: A neglected species*. Houston: Gulf Publishing Co.

Krouska, A., Troussas, C., & Virvou, M. (2018). Social annotation tools in digital learning: A literature review. *2018 9th International Conference on Information, Intelligence, Systems and Applications (IISA)*, 1–4. https://doi.org/10.1109/IISA.2018.8633609

Kumpulainen, K., & Wray, D. (2003). *Classroom interactions and social learning: From theory to practice*. Routledge.

Kumpulainen, K., Krokfors, L., Lipponen, L., Tissari, V., Hilppö, J., & Rajala, A. (2009). *Learning bridges: Toward participatory learning environments*. Helsinki: CICERO Learning, University of Helsinki.

Kuo, Y. C., Walker, A. E., Belland, B. R., & Schroder, K. E. (2013). A predictive study of student satisfaction in online education programs. *International Review of Research in Open and Distributed Learning*, *14*(1), 16-39.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Lebow, D. G., Lick, D. W., Hartman, H. J., Dalglish, C., & Grundmann, O. (2011). Social annotation to enhance learning and assessment in higher education. In *Educating Educators with Social Media* (pp. 261-278). Emerald Group Publishing Limited.

Lin, Y. K., & Lai, Y. S. (2009). Dead-time elimination of PWM-controlled inverter/converter without separate power sources for current polarity detection circuit. *IEEE Transactions on Industrial Electronics*, *56*(6), 2121-2127.

Lin, J. W., & Lai, Y. C. (2014). Using collaborative annotating and data mining on formative assessments to enhance learning efficiency. *Computer Applications in Engineering Education*, *22*(2), 364–374. https://doi.org/10.1002/cae.20561

Lindlof, T. R. & Taylor, B. C. (2002). *Qualitative communication research methods* (2nd edition). Sage.

Liu, I. F., Chen, M. C., Sun, Y. S., Wible, D., & Kuo, C. H. (2010). Extending the TAM model to explore the factors that affect intention to use an online learning community. *Computers & Education*, *54*(2), 600-610.

Liu, X., Magjuka, R. J., Bonk, C. J., & Lee, S. H. (2007). Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *Quarterly Review of Distance Education*, *8*(1), 9.

Lo, J. J., Yeh, S. W., & Sung, C.-S. (2013). Learning paragraph structure with online annotations: An interactive approach to enhancing EFL reading comprehension. *System*, *41*(2), 413–427. https://doi.org/10.1016/j.system.2013.03.003

Lock, J. V., & Redmond, P. (2006). International online collaboration: Modeling online learning and teaching. *Journal of Online Learning and Teaching*, *2*(4), 233-247.

Maloch, B. (2002). Scaffolding student talk: One teacher's role in literature discussion groups. *Reading Research Quarterly*, *37*(1), 94-112.

Mandernach, B. J., Forrest, K. D., Babutzke, J. L., & Manker, L. R. (2009). The role of instructor interactivity in promoting critical thinking in online and face-to-face classrooms. *MERLOT Journal of Online Learning and Teaching*, *5*(1), 49-62.

Maor, D. (2003). Teacher's and students' perspectives on online learning in a social constructivist learning environment. *Technology, Pedagogy and Education*, *12*(2), 201-218.

Maor, D., & Hendriks, V. (2001). Peer-learning and reflective thinking in an online community of learners. In *AARE 2001 International Education Research Conference. Crossing Borders: New Frontiers for Educational Research*.

Marshall, C. C., & Brush, A. J. B. (2004). Exploring the relationship between personal and public annotations. *Proceedings of the 4th ACM/IEEE-CS Joint Conference on Digital Libraries*, 349–357. https://doi.org/10.1145/996350.996432

Martens, R., Bastiaens, T., & Kirschner, P. A. (2007). New learning design in distance education: The impact on student perception and motivation. *Distance Education*, *28*(1), 81-93.

Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online learning*, *22*(1), 205-222.

Martin, F., Ritzhaupt, A., Kumar, S., & Budhrani, K. (2019). Award-winning faculty online teaching practices: Course design, assessment and evaluation, and facilitation. *The Internet and Higher Education*, *42*, 34-43.

Martin, F., Sun, T., & Westine, C. D. (2020). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, *159*, 104009.

Mason, R. (1998). Models of online courses. *ALN magazine*, *2*(2), 1-10.

Mazzolini, M., & Maddison, S. (2007). When to jump in: The role of the instructor in online discussion forums. *Computers & Education*, *49*(2), 193-213.

McCarty, L.P., & Schwandt, T.A. (2000). Seductive illusions: Von Glaserfeld and Gergen on epistemology and education. In D.C. Phillips (Ed.), *Constructivism in education: Opinions and second opinions on controversial issues III* (pp. 48–69). Chicago, IL: University of Chicago Press.

Mercer, N., & Howe, C. (2012). Explaining the dialogic processes of teaching and learning: The value and potential of sociocultural theory. *Learning, Culture and Social Interaction*, *1*(1), 12–21.

Merriam, S. B. (1998). *Qualitative research and case study applications in education.* Revised and expanded from *Case Study Research in Education".* ERIC.

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.

Michelson, K., & Dupuy, B. (2017). Teacher learning under co-construction: Affordances of digital social annotated reading. *Alsic*, *21*(Volume 21), 1–15. https://doi.org/10.4000/alsic.3344

Miller, K., Lukoff, B., King, G., & Mazur, E. (2018). Use of a social annotation platform for pre-class reading assignments in a flipped introductory physics class. In *Frontiers in Education* (p. 8). Frontiers.

Moallem, M. (2015). The impact of synchronous and asynchronous communication tools on learner self-regulation, social presence, immediacy, intimacy, and satisfaction in collaborative online learning. *The Online Journal of Distance Education and e-Learning*, *3*(3), 55-77.

Moore, M. J. (1993). Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), *Distance education theory* (pp. 19–24). Routledge.

Morgan, D. L. (2013). *Integrating qualitative and quantitative methods: A pragmatic approach*. Sage Publications.

Morris, L. V., & Finnegan, C. L. (2008). Best practices in predicting and encouraging student persistence and achievement online. *Journal of College Student Retention: Research, Theory & Practice*, *10*(1), 55-64.

Mosenthal, J., Lipson, M., Torncello, S., Russ, B., & Mekkelsen, J. (2004). Contexts and practices of six schools successful in obtaining reading achievement. *The Elementary School Journal*, *104*(5), 343-367.

Nasir, N.S., & Hand, V.M. (2006). Exploring sociocultural perspectives on race, culture, and learning. *Review of Educational Research, 76*, 449–475.

National Academies of Sciences, Engineering, and Medicine. 2018. *How People Learn II: Learners, Contexts, and Cultures*. Washington, DC: The National Academies Press. https://doi.org/10.17226/24783.

Novak, E., Razzouk, R., & Johnson, T. E. (2012). The educational use of social annotation tools in higher education: A literature review. *Internet and Higher Education*, *15*(1), 39–49. https://doi.org/10.1016/j.iheduc.2011.09.002

O'Dell, K. (2020). Modern marginalia: Using digital annotation in the composition classroom. *Computers and Composition*, *56*, 102570.

Osman, M. E. (2005). Students' reaction to Web CT: Implications For designing online Learning environments. *International Journal of Instructional Media*, *32*(4), 353.

Palloff, R. M., & Pratt, K. (2005). Learning online: A collaborative approach. In *Proceedings of the Annual Conference on Distance Teaching and Learning. University of Wisconsin-Madison* (pp. 279-282).

Palocsay, S. W., & Stevens, S. P. (2008). A study of the effectiveness of web-based homework in teaching undergraduate business statistics. *Decision Sciences Journal of Innovative Education*, *6*(2), 213-232.

Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Sage.

Piaget, J. (1977). *The Development of thought: Equilibration of cognitive structures.* Holt.

Plevinski, J., Weible, J. and Deschryver, M. (2017), "*Anchored annotations to support collaborative knowledge construction introduction,*" Making a difference: Prioritizing equity and access in CSCL. 12th International Conference on Computer Supported Collaborative Learning (CSCL), No. 2013, pp. 111-118.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education, 2*, 923-945.

Razon, S., Turner, J., Johnson, T. E., Arsal, G., & Tenenbaum, G. (2012). Effects of a collaborative annotation method on students' learning and learning-related motivation and affect. *Computers in Human Behavior*, *28*(2), 350-359.

Reid, A. J. (Ed.). (2018). *Marginalia in modern learning contexts*. IGI Global.

Rogoff, B. (2003). *The cultural nature of human development*. Oxford University Press.

Rogoff, B. (2016). Culture and participation: A paradigm shift. *Current Opinion in Psychology*, *8*, 182–189. https://doi.org/10.1016/j.copsyc.2015.12.002

Roper, A. R. (2007). How students develop online learning skills. *Educause Quarterly*, *30*(1), 62.

Sandelowski, M. (2010). What's in a name? Qualitative description revisited. *Research in Nursing & Health*, *33*(1), 77-84.

Santrock, J. (2008). Physical development and biological aging. *A Topical Approach to Life-Span Development.* New York: McGraw-Hill Companies, Inc, 129-132.

Schacht, P. (2015). Annotation. *MLA commons digital pedagogy in the humanities: Concepts, models and experiments*.

Schell, G. P., & Janicki, T. J. (2013). Online course pedagogy and the constructivist learning model. *The Journal of the Southern Association for Information Systems*, *1*(1), 26-36.

Schneider, E. (2016). *Designing digital tools for critical reading: Multiple perspectives on a platform for social annotation*. December. https://search.proquest.com/docview/2458969220

Seale, C. (1999). *The quality of qualitative research.* Sage.

Seaman, J. E., Allen, I. E., & Seaman, J. (2018). Grade increase: Tracking distance education in the United States. In *Babson Survey Research Group*. Babson Survey Research Group. https://eric.ed.gov/?id=ED580852

Shrout, A. H. (2016). Hypothes.is. *J Am Hist, 103*, 870–871.

Siemens, G. (2005). Learning development cycle: Bridging learning design and modern knowledge needs. *eLearn space everything eLearning*, *48*(9), 800-809.

Siemens, G. (2008). Blurring Roles: Participation Trends in Media and Education. In *E-Learn: World Conference on E-Learning.* Association for the Advancement of Computing in Education (AACE).

Siemens, G., & Dawson, S. (2015). *Preparing for the digital university.* Athabasca University. Retrieved online from: http://linkresearchlab.org/PreparingDigitalUniversity.pdf

Sievers, J. (2021). Writing between the lines: Teaching digital reading with social annotation in an introductory literature course. *Pedagogy*, *21*(3), 427-453.

Skains, R. L. (2020). Discourse or gimmick? Digital marginalia in online scholarship. *Convergence*, *26*(4), 942-955.

Skylar, A. A. (2009). A comparison of asynchronous online text-based lectures and synchronous interactive web conferencing lectures. *Issues in Teacher Education*, *18*(2), 69-84.

Smagorinsky, P. (2013). What does Vygotsky provide for the 21st-century language arts teacher? *Language Arts*, *90*(3), 192-204.

Snyder, M. M. (2009). Instructional-design theory to guide the creation of online learning communities for adults. *TechTrends*, *53*(1), 48-56.

Solmaz, O. (2020). Examining the collaborative reading experiences of English language learners for online second language socialization. *The Reading Matrix: An International Online Journal*, *20*(1), 20-35.

Spector, J. M., Johnson, T. E., & Young, P. A. (2014). An editorial on research and development in and with educational technology. *Educational Technology Research and Development*, 62, 1-12.

Stahl, G. (2017). Group practices: A new way of viewing CSCL. *International Journal of Computer-Supported Collaborative Learning*, *12*(1), 113–126. https://doi.org/10.1007/s11412-017-9251-0

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* 2nd ed. Sage Publications.

Sun, Y., & Gao, F. (2017). Comparing the use of a social annotation tool and a threaded discussion forum to support online discussions. *Internet and Higher Education*, *32*, 72–79. https://doi.org/10.1016/j.iheduc.2016.10.001

Sutherland, R., Armstrong, V., Barnes, S., Brawn, R., Breeze, N., Gall, M., ... & John, P. (2004). Transforming teaching and learning: Embedding ICT into everyday classroom practices. *Journal of Computer Assisted Learning*, *20*(6), 413-425.

Tee, M. Y., & Karney, D. (2010). Sharing and cultivating tacit knowledge in an online learning environment. *International Journal of Computer-Supported Collaborative Learning*, *5*, 385-413.

Tellis, W. (1997). Application of a case study methodology. *The Qualitative Report*, *3*(3), 1-19.

Thoms, J. J., & Poole, F. (2017). Investigating linguistic, literary, and social affordances of L2 collaborative reading. *Language Learning and Technology*, *21*(2), 139–156.

Thoms, J. J., & Poole, F. J. (2018). Exploring digital literacy practices via L2 social reading. *L2 Journal*, *10*(2).

Thoms, J. J., Sung, K. Y., & Poole, F. (2017). Investigating the linguistic and pedagogical affordances of an L2 open reading environment via eComma: An exploratory study in a Chinese language course. *System*, *69*, 38-53.

Tomasello, M. (2001). Perceiving intentions and learning words in the second year of life. *Language Acquisition and Conceptual Development*, *3*, 132-158.

Tomasello, M. (2016). Cultural learning redux. *Child Development, 87*(3), 643–653.

Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851.

Tseng, S. S., & Yeh, H. C. (2018). Integrating reciprocal teaching in an online environment with an annotation feature to enhance low-achieving students' English reading comprehension. *Interactive Learning Environments*, *26*(6), 789-802.

Van der Pol, J., Van den Berg, B. A. M., Admiraal, W. F., & Simons, P. R. J. (2008). The nature, reception, and use of online peer feedback in higher education. *Computers & Education*, *51*(4), 1804-1817.

Viriya, C. (2022). Exploring the impact of synchronous, asynchronous, and bichronous online learning modes on EFL students' self-regulated and perceived English language learning. *REFLections*, *29*(1), 88-111.

Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online learning. *Journal of Research on Technology in Education*, *39*(3), 309-328.

Vrasidas, C. (2000). Constructivism versus objectivism: Implications for interaction, course design, and evaluation in distance education. I*nternational Journal of Educational Telecommunications, 6*(4), 339-362.

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard University Press.

Wang, M., Sierra, C., & Folger, T. (2003). Building a dynamic online learning community among adult learners. *Educational Media International*, *40*(1-2), 49-62.

Weick, K. E. (2007). The generative properties of richness. *Academy of Management Journal*, *50*(1), 14–19.

Wenger, E. (1998). Communities of practice: Learning as a social system. *Systems Thinker*, *9*(5), 2–3.

Wertsch, J. V. (1991). *Voices of the mind: Sociocultural approach to mediated action*. Harvard University Press.

Wilson, B. G., Jonassen, D. H., & Cole, P. (1993). Cognitive approaches to instructional design, *The ASTD handbook of instructional technology*, *4*, 21-21.

Winn, W. (1993). A constructivist critique of the assumptions of instructional design. In *Designing environments for constructive learning* (pp. 189-212). Springer Berlin Heidelberg.

Wolfe, J. (2008). Annotations and the collaborative digital library: Effects of an aligned annotation interface on student argumentation and reading strategies. *International Journal of Computer-Supported Collaborative Learning*, *3*, 141-164.

Wolfe, J. L., & Neuwirth, C. M. (2001). From the margins to the center: The future of annotation. *Journal of Business and Technical Communication*, *15*(3), 333-371.

Wright, L. K., Zyto, S., Karger, D. R., & Newman, D. L. (2013). Online reading informs classroom instruction and promotes collaborative learning. *Journal of College Science Teaching*, *43*(2), 44-53.

Yang, S. J., Zhang, J., Su, A. Y., & Tsai, J. J. (2011). A collaborative multimedia annotation tool for enhancing knowledge sharing in CSCL. *Interactive Learning Environments*, *19*(1), 45-62.

Yang, X., Yu, S., & Sun, Z. (2013). The effect of collaborative annotation on Chinese reading level in primary schools in China. *British Journal of Educational Technology*, *44*(1), 95–111. https://doi.org/10.1111/j.1467-8535.2011.01277.x

Yeh, S. W., Lo, J. J., & Chu, H. M. (2014). Application of online annotations to develop a web-based Error Correction Practice System for English writing instruction. *System*, *47*, 39-52.

Yeh, S.-W., & Lo, J.-J. (2009). Using online annotations to support error correction and corrective feedback. *Computers & Education*, *52*(4), 882–892. https://doi.org/10.1016/j.compedu.2008.12.014

Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). Sage.

Zarzour, H., & Sellami, M. (2017). A linked data-based collaborative annotation system for increasing learning achievements. *Educational Technology Research and Development*, *65*(2), 381–397. https://doi.org/10.1007/s11423-016-9497-7

Zarzour, H., & Sellami, M. (2018). An investigation into whether learning performance can be improved by CAALDT. *Innovations in Education and Teaching International*, *55*(6), 625–632. https://doi.org/10.1080/14703297.2017.1286997

Zhu, X., Chen, B., Avadhanam, R. M., Shui, H., & Zhang, R. Z. (2020). Reading and connecting: Using social annotation in online classes. *Information and Learning Sciences*.

Zucker, L., Kalir, J., Sprouse, M., & Dean, J. (2021). Foregrounding the margins: A dialogue about literacy, learning, and social annotation. *Teaching/Writing: The Journal of Writing Teacher Education*, *10*(1). https://scholarworks.wmich.edu/wte/vol10/iss1/10

# APPENDICES

## Appendix A

IRB Approval

UNIVERSITY OF MINNESOTA

*Twin Cities Campus*

***Human Research Protection Program***
*Office of the Vice President for Research*

*Room 330-2*
*McNamara Alumni Center*
*200 Oak Street S.E.*
*Minneapolis, MN 55455*

*612-626-5654*
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APPROVAL OF NEW STUDY

December 14, 2022

Cassie Scharber

612-625-6607
scharber@umn.edu

Dear Cassie Scharber:

On 12/12/2022, the IRB reviewed the following submission:

| | |
|---|---|
| Type of Review: | Initial Study |
| Title of Study: | Meeting Students in the Margins: Exploring the Use of Social Annotation by Undergraduate Online Instructors |
| Investigator: | Cassie Scharber |
| IRB ID: | STUDY00017814 |
| Sponsored Funding: | None |
| Grant ID/Con Number: | None |
| Internal UMN Funding: | None |
| Fund Management Outside University: | None |
| IND, IDE, or HDE: | None |
| Documents Reviewed with this Submission: | • Interview Questions, Category: Other;<br>• HRP_580 Form, Category: IRB Protocol;<br>• Recruitment materials and emails, Category: Recruitment Materials;<br>• Consent form with template, Category: Consent Form;<br>• Student consent form with template, Category: Consent Form |

The IRB determined that the criteria for approval have been met and that this study involves no greater than minimal risk.

This study was approved under Expedited Category(ies):

- (7) Research on individual or group characteristics or behavior or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

This study does not require continuing review. The revised Common Rule (2018 Rule) eliminated continuing review for most minimal risk research approved on or after January 21, 2019. However, the elimination of continuing review does not eliminate reporting requirements or submission of modifications for IRB review and approval. Information about 2018 Rule requirements and investigator responsibilities can be found in the Investigator Manual (HRP-103).

If consent forms or recruitment materials were approved, those are located under the Final column in the Documents tab in the ETHOS study workspace.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the HRPP Toolkit Library on the IRB website.

For grant certification purposes, you will need the approval and last day of approval dates listed above and the Assurance of Compliance number which is FWA00000312 (Fairview Health Systems Research FWA00000325, Gillette Children's Specialty Healthcare FWA00004003).

Sincerely,

Clinton Dietrich, MA, CIP
Senior IRB Analyst

We strive to provide clear, consistent, and timely service to maintain a culture of respect, beneficence, and justice in research. Complete a brief survey about your experience.

# Appendix B

Instructor Consent form and Recruitment Emails

**Instructor Recruitment Material**

Dear instructor,

Thank you for your interest in participating in the research study on "Meeting students in the margins: exploring instructor use of social annotation in undergraduate online courses". I am Rukmini Avadhanam, a Ph.D. candidate in the Learning Technologies program in the department of Curriculum and Instruction at the University of Minnesota. I have been using social annotation tools in my online undergraduate courses for the last few years and my research topic stems from my interest to know more about other instructors' experiences with social annotation tools.

This qualitative case study is designed to delve into the instructors' design, pedagogical and participatory processes with social annotation tools. The study will include in-depth interviews (3 times) with the participants, a walkthrough of the course syllabus and course LMS, and instructors sharing access to their class social annotation group.

Your participation will involve the following things:

1. An introductory semi-structured interview with the researcher online via zoom for about 60 minutes. The researcher will provide an overview of the study during this interview. This interview will also focus on your online teaching experiences and syllabus and LMS walk-through of a course in the past year where you have used social annotation tools. The interview will happen in the fall of 2022 and spring of 2023.
2. Providing access to the class social annotation activity group to the researcher. The researcher will deidentify and anonymize all the student data and will select some of your annotation activities for analysis.
3. The second in-depth interview will be conducted via zoom for about 60 minutes. This interview will focus on your design, pedagogical and participatory experiences in using social annotation tools for your undergraduate online classes. The instructor will share some of your annotation activities with you prior to the interview and will ask you questions about the participatory decisions you have made in responding to student discussions.
4. A summary of the qualitative analysis of your interviews and social annotation participation will be shared with you via email in a google document. The summary will include themes that emerged from your responses and will be about 1 page. You will be asked to review the summary and let the researcher know if they have captured your perspectives accurately and if there are any discrepancies or any other points that you would like to add.

All the interviews will be recorded via zoom and will be kept confidential. Pseudonyms will be used in place of your real names or any other identifiers. The social annotation class group will be only used to identify and analyze the instructors' annotations. Student data will only be reviewed for context related to instructor participation. All the student identifiers will be

deidentified and anonymized. Each student will be given a unique identifier code and they will only be referred to using that code. All the materials collected from the instructor will be confidential and only the researcher will have access to them. They will not be shared outside the research context.

Please note that your participation in this study is completely voluntary. You are free to withdraw from the study at any point of time. This study has been approved by the Institutional Review Board (IRB) at the University of Minnesota. The IRB-approved consent form is attached.

Thank you again for your interest and participation. Please let me know if you have any questions or concerns. I look forward to further discussing your perspectives on using social annotation in your online undergraduate courses.

Sincerely,
Student Investigator
Rukmini Manasa Avadhanam
E-mail: avadh005@umn.edu
Phone: +1 651-354-7812

Instructor Recruitment Emails

**First email:**
Dear [name of instructor],

My name is Rukmini Avadhanam, a Ph.D. candidate in the Learning Technologies program at the College of Education and Human Development of the University of Minnesota-Twin Cities (UMN). As an online instructor and learner, I have been interested in integrating social annotation activities into the undergraduate online courses I teach. As I researched more about the literature on social annotation in online learning, I found that very few studies discuss how and why instructors use social annotation activities in their undergraduate classes. I believe that understanding the design and pedagogical processes of instructors in implementing an online course with social annotation is important to create awareness for other instructors who are interested in refining their pedagogies. Self-reflection on instructor practices helps in connecting beliefs to practices. So, I am conducting a qualitative study to understand instructors' processes in-depth on how and why they use social annotation in their undergraduate online courses.

You have been a valuable part of the university as an instructor and I am sincerely inviting you to participate in this study. I would like to get your insights on using social annotation if you are currently using it in an online undergraduate course or have used it in a similar course in the last 6-9 months that you are willing to talk about. I will be grateful to discuss more if you are interested in participating. Looking forward to hearing from you.

Warm regards,

**Second email**

Dear instructor,
Thank you so much for your interest in participating in the study "Meeting students in the margins: Exploring instructors use of social annotation in undergraduate online courses". For the next steps, I need your formal consent for your participation in this study. Please click on this link to access the consent form (__). I would be happy to discuss the consent process via zoom if you need more details. Please reach out to me if you have any questions about the study.

Warm regards,

## Appendix C

Introductory Interview Questions

1. Tell me a little bit about yourself.
2. How long have you been teaching in-person and online? What are some of your favorite classes?
3. Describe yourself as a teacher. What is your teaching philosophy or a motto that you go by?
4. What are your perceptions about teaching an undergraduate online class?
5. Describe your general approach to teaching a course/the course you shared with me online. How do you design and implement an online undergraduate course? What are the pedagogical aspects and/or learning theories that you focus on?
6. Describe a memory you have with annotation, paper or digital, as a student. Explain your experience annotating a coursebook or an article.
7. How did you first learn about social annotation? Describe your experience as a learner or an instructor working with a social annotation tool.
8. Explain why you used Social Annotation in your online class. How do you choose the social annotation tool for your class goals?
9. What are your goals for using SA in your class? How does using SA relate to your course objectives?
10. Do you assess the SA activities that you give to your students? Do you have any rubrics to assess them?
11. How often do you check or read your students' annotations?
12. Do you participate in SA activities? How often do you participate and respond to annotations?
13. Can you walk me through the course LMS/Canvas page and explain how the course is designed and implemented?
14. Can you walk me through the course syllabus and share the learning objectives and assignments?
15. Please share the course SA group with me. Or Please walk me through your SA activities which have been integrated into your Canvas LMS course page.

## Appendix D

In-Depth Interview Questions

**Design-related questions**

- How do reading and discussion align with your course objectives?
- Why did you move away from your general approach to online discussion to implement SA in your online class?
- Tell me about one undergraduate course (online/hybrid- synchronous/asynchronous) that you have taught or are teaching. Can you explain any 3 learning objectives of the course? Discuss how the social annotation tool fits the course learning goals and objectives.
- Walk me through the process of how you design this UG course. What are the types of learning activities and assignments you design in this course?
- What are the different types of social annotation activities you design in this course and why?
- Follow-up: Why do you design social annotation activities in small groups? What are the learning outcomes you are looking for in designing an activity like this?
- What are the aspects that are going well about using SA? What is the value you see in designing a course with SA?
- What aspects of SA (tool and designing with SA) did you find challenging? Can you give me an example of the challenges you faced? How did you address these challenges?
- What do you do or who do you reach out to when you face design challenges while using an SA tool/activity in your class?
- How do you assess the annotations and responses students make in the SA group? Do you have any protocols or rubrics that you developed or used? Walk me through an example from the SA group. (Share your screen)

**Pedagogy-related questions**

- How do you prepare for a class? How do you return student annotations to your teaching and an asynchronous or synchronous class?
- Can you share an example of a learning outcome students achieve because of using Social Annotation activities in this course?
- How do you think SA is helping student learning? Can you share an example or memory of student learning and participation with SA?
- What difference did you notice about your teaching after you started using SA? How does it compare to the time you taught classes before using SA?
- How do you address student questions about social annotation?
- Do you participate in SA activities? If yes- How do you participate in the SA activities?

- How often do you respond to student annotations? What makes you respond to student annotations?
- What questions or prompts do you provide your students to annotate and respond to each other? How does that help student participation and learning?
- If you do not directly participate in the annotation activities often, how do you facilitate learner-instructor-content interaction in your class through annotation activities?
- What are your reasons for not participating in SA activities and responding to students on annotations as often as you'd like?
- How do you guide/direct/support student annotations and responses?
- How much instructor participation do you think is required for student annotation to be substantial?

## Appendix E

Member Reflection Questions

1. Do you think the transcripts/ summary memos reflect our discussion accurately?
2. Did I understand your perspectives on SA the way you intended?
3. Are there any aspects in the interviews that we missed discussing that you would like to talk about?
4. What do you think of the initial categories and themes that came out of our interview? Are there any aspects that you would like to discuss more about?

## Appendix F

Course LMS and Social Annotation Walk-through Protocol

**Course Information**

*Name of the course:*
*Course Modality:*
*Number of weeks:*
*Semester:*
*Any other course related information:*

| **Features** | **Yes/No (highlight one)** | **Observer Notes** |
|---|---|---|
| Course Syllabus Shared | Yes/No | |
| Course overview shared | Yes/No | |
| Course objectives shared | Yes/No | |
| Course calendar and deadlines shared | Yes/No | |
| Weekly deadlines for assignments and activities provided | Yes/No | |
| Materials and textbooks provided weekly | Yes/No | |

**Course Design Details**

| **Features** | **Yes/No or on a scale of 1-5** | **Observer Notes** |
|---|---|---|
| Instructor overview videos/audios are available | Yes/No | |
| LMS layout is organized weekly | Yes/No | |

| | | |
|---|---|---|
| Communication:<br>There is space and details to reach instructor | Yes/No | |
| There is space to ask questions | Yes/No | |
| There is space for learners to talk to each other and share resources | Yes/No | |
| Gradebook and student tracking are available for learners to view | Yes/No | |
| Grading rubrics are used by instructor and shared | Yes/No | |
| Class values are shared in LMS or syllabus page | Yes/No | |
| Flexibility in design and delivery and assessments and deadlines | 1-5 scale | |
| Accessibility features provided by the instructor | 1-5 scale | |
| Course is designed according to UDL guidelines | 1-5 scale | |
| LMS Layout is easy to navigate | 1-5 scale | |
| Any other course design related details | | |

**Technology and Tools**

| **Features** | **Observer Notes and Details** |
|---|---|
| Multimedia technologies used (Add the names in the notes) | |
| Other participation and discussion platforms and tools used (Add details in the notes) | |
| Collaboration and discussion spaces used | |

| | |
|---|---|
| apart from LMS- like slack, website, text chain | |
| Other details about technology and tools | |

**Course Activities and Participation**

| **Features** | **Observer Notes and Details** |
|---|---|
| Different activities and assignments in the course (Add details in the observer notes section) | |
| Types of student discussion and participation activities<br>(Add details in the observer notes section) | |
| Percent or weight of the total grade for student participation<br>(Add details in the observer notes section) | |
| Learning analytics used for student tracking and grading:<br>Name of tracking tools<br>Methods of analysis<br>(Add details in the observer notes section) | |
| Other types of assignments and quizzes tools used:<br>(Add details in the observer notes section) | |
| Other details related to course activities and assignments:<br>(Add details in the observer notes section) | |

**Instructor Presence**

| **Features** | **Yes/No** | **Observer Notes** |
|---|---|---|
| Instructor overview videos/audios are available | Yes/No | |
| Instructor participation in LMS and discussions | Yes/No | |

| | | |
|---|---|---|
| Instructor feedback is provided for assignments and activities:<br><br>How, where, and how often is it provided:<br>(Add details in the observer notes section) | Yes/No | |
| Instructor support information and frequency (Add details in the observer notes section) | | |
| Other details related to instructor presence (Add details in the observer notes section) | | |

**SA details in the course LMS and Syllabus**

| **Features** | **Yes/No** | **Observer Notes** |
|---|---|---|
| SA tool used (Add details in the observer notes section) | | |
| SA group shared | Yes/No | |
| Student familiarity with SA discussed in LMS | Yes/No | |
| Tutorials for SA included in LMS:<br><br>Browser support and instructions are provided | Yes/No | |
| Space in LMS for students to discuss questions related to SA | Yes/No | |
| How the course objectives align with the use of SA activities (Add details in the observer notes section) | | |
| Percent of the total grade for SA activities (if graded) | | |

| | | |
|---|---|---|
| (Add details in the observer notes section)<br><br>If not graded, discuss why | | |
| Any rubrics for SA grading<br><br>(Add details in the observer notes section) | | |
| Any integration or analytics used by instructors for SA (Add details in the observer notes section) | | |
| Other SA related details in LMS<br><br>(Add details in the observer notes section) | | |