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ORIGINAL PAPER

Preservice Teacher Perceptions of Using Video Discussions to Foster a Community of Inquiry—Does the Learning Environment Matter?

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Abstract
The creation of an engaging online learning environment where students feel a sense of belonging is a challenge for all educators. With the rise of online courses, discussion forums are commonly used to connect students with course content, peers, and instructors. However, these discussions are often text-based in nature. The purpose of this quantitative study examined preservice teacher perceptions of Flipgrid in an introductory educational technology course. Statistically significant relationships between groups were found related to two of the three components of the Community of Inquiry framework. Specifically, the findings suggest those enrolled in a hybrid course perceived Flipgrid as a more effective platform to create cognitive and teaching presence than those online. Additionally, hybrid learners were significantly more likely to use Flipgrid in their own teaching practices. In this article, an analysis of findings will be discussed and provide suggestions for future research.

Keywords Community of inquiry · Flipgrid · Hybrid learning · Learning environments · Online discussions · Online learning · Text-based discussions · Video discussions

Introduction

Online courses were offered for the first time more than 30 years ago (Lowenthal & Moore, 2020). Since inception, the popularity of online education has continued to increase. More recently in 2018, online education increased for the 14th consecutive year with over 3.2 million students enrolled exclusively in online courses (National Center for Education Statistics, 2018). Although many technological advances occurred over the past three decades, interaction has changed little for instructors and learners. Despite the advancement of learning management systems (LMS) and strategies related to online instructional design, most conversations in online educational settings between stakeholders do not integrate video. Specifically, within higher education, asynchronous text-based discussions continue to serve as the fundamental medium of interaction (Garrison, 2017).

A number of factors promote asynchronous text-based discussions as the preferred interactive media for instructors. In an online learning environment, discussion forums provide a space where students can engage with peers, course content, and instructors at a time and geographic setting which is convenient for them (Mango, 2019). Prior research also revealed they foster development of inclusive learning communities by encouraging self-evaluation and equitable participation (Bali & Liu, 2018). For online learners, text-based discussion forums diminish reported feelings of isolation or disconnectedness from other learners that may be found in virtual learning environments (Romero-Hall & Vicentini, 2017).

Although text-based discussion forums feature multiple strengths, they also face latent shortcomings and are characterized as detached and antisocial. In a written discussion, visual social cues are nonexistent and learners were less likely to deviate from task-oriented communication. A further limitation to written discussions is the absence of cultural context and vocal delivery, which are fundamental to constructing and understanding meaning (Serembus & Murphy, 2020). Previous research found text-based

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discussions inhibit emotional displays, promote passiveness in the learning process, and offer few gratifying and worthwhile interactions with peers or faculty (Clark et al., 2015; McLain, 2018). Text-based discussions also may struggle to promote inclusive learning environments. This obstacle may contribute to increased student attrition and provide insight as to why learners may struggle in online courses (Jones-Roberts, 2018).

Prior studies found when students are provided an opportunity to connect and interact with fellow learners, they indicated a stronger sense of social presence. These factors contribute to the likelihood of more success in online courses (Bali & Liu, 2018; Petersen et al., 2020; Stoszkowski, 2018). The findings allowed online educators to establish effective strategies to enhance discussions in online learning environments. However, prior research found emerging technologies, including asynchronous video platforms, provided creative possibilities for students to develop relationships and enhance content knowledge (Howard & Myers, 2010; Mahmoudi & Gronseth, 2019; Petersen et al., 2020).

Despite these previous investigations, researchers have not yet examined whether student perceptions of video discussion boards compared to text-based discussions may diverge depending upon the learning environment. The purpose of this study was to further investigate preservice teachers' perceptions of using Flipgrid as an asynchronous video discussion tool within the Community of Inquiry framework. Non-probability sampling was used to identify participants based upon the learning environment. Respondents were enrolled in one of two course learning environments: 1) asynchronous online instruction with no face-to-face component; 2) a hybrid with asynchronous online delivery and one 75-min weekly face-to-face meeting for 12 weeks. In the following manuscript, we will describe and discuss the results of our investigation and significance related to future research and practice.

Literature Review

The following literature review investigated previous studies focused on text and video-based discussion boards, Flipgrid, usage of the technology, and the Community of Inquiry (CoI) framework. The use of Flipgrid occurred in online and hybrid learning environments within an introductory educational technology course. According to Goodyear et al., (2001, p. 6.), "a learning environment is 1) the physical setting in which a learner or community of learners carry out their work, including all the tools documents and other artifacts to be found in that setting; 2) the social/ cultural setting for such work". This operational definition for the learning environment was adopted for the purposes of this study.

Video-Based Discussion Platforms

Video response technologies serve as social interfaces to provide learners an opportunity to collaborate and communicate with peers at a convenient time and place of their choosing. This video communication also allows for a visually rich, nonverbal, and secure environment (Lowenthal et al., 2020). In a video discussion forum, a participant records a video of a predetermined length, which can be set by the instructor, utilizing the webcam and microphone on a computer or mobile device. Then, students upload their responses to the discussion where peers can watch on their own time, and if they desire, like, comment or respond to the video via their own recorded response or text (Clark et al., 2015).

Originally, discussion forums could contain uploaded videos where others could respond with a text-based reply, such as in YouTube, to comment as well as annotate the video (Howard & Myers, 2010; Lowenthal & Mulder, 2017). Although these types of resources are emerging, prior research established promising integration in various educational contexts. Initial studies revealed students preferred video-based discussions over those which are text-based (Clark et al., 2015; Mohamad Ali & Jabar, 2016). More specifically, group cohesion is an important element of social presence and has been found to increase with the integration of video discussions (Lowenthal & Moore, 2020). Further, prior research revealed students viewed video-based discussions as a conduit to improve connections between instructors and students (Romero-Hall & Vicentini, 2017).

The usage of video-based discussion platforms may be of particular benefit for online students to combat feelings of isolation, minimize transactional distance, and foster connections based on interests or geographic location. Cognitive presence is also supported with video replies and the interactive conversations that occur between peers and their instructor (Serembus & Murphy, 2020). The capability to reply to other videos is a feature which can help to increase the potential applications of learning. These technical capabilities allow for threaded comments and short video replies to develop cognitive, social, and teaching presence components (Mango, 2019).

Lastly, teaching presence is also supported by allowing for collaboration when instructors and students can exchange asynchronous replies about course content. When used effectively, these interactions help support the type of collaboration and engagement students seek in their courses (Gurjar, 2020; Moore, 2016). These platforms, such as Flipgrid,

allow students to interact and engage with each other in ways not previously possible which help to increase social presence (Jones-Roberts, 2018; Mahmoudi & Gronseth, 2019).

Introduction of Flipgrid as a Learning Tool

Flipgrid is a free online video-mediated communication platform founded in 2015 primarily targeted for K-12 teachers, higher education faculty, and students of all ages in more than 180 countries (Miskam & Saidalvi, 2019). Instructors create their own class or section within the Flipgrid website which are known as grids. Inside of each grid the instructor places the topic, which is the discussion forum where interaction occurs. Acting as a facilitator, instructors can incorporate specialized resources and attachments such as YouTube videos and documents from Google Drive (Stoszkowski, 2018). Flipgrid provides students the opportunity to record videos as short as 30 s and up to 10 min and they may reply to other videos as well. This interaction leads to an authentic and collaborative learning experience (McLain, 2018).

One of Flipgrid's main objectives is to provide an opportunity for learners to have unlimited opportunities to practice their oral presentation skills. Within the platform, learners can record and view recordings before submission and may delete and re-record if they are unsatisfied with their performance (Miskam and Saidalvi, 2019). By creating an inclusive learning environment, students may become more willing to take risks and place more emphasis on content and developing understanding (Carrie & Timothy, 2020). Participants can directly record video responses by using a web or smartphone camera. Once recording is completed, a preview video will appear to review before hitting the 'send' button. Further, settings within Flipgrid permits instructors to be fully in control of posted content through moderation and access restrictions. If an instructor wishes to moderate content, each video will need approval before being posted for others to watch (Bartlett, 2018).

When implemented effectively, Flipgrid has the potential to support interaction and collaboration between students and instructors within all learning environments. A 2020 study by Delmas and Moore found the use of Flipgrid in higher education healthcare courses promoted a sense of community and connection. Although researchers explored the use of Flipgrid in the areas of physics (Bali & Liu, 2018), language learning (McLain, 2018), business (Lowenthal & Moore, 2020), and public speaking (Gerbensky-Kerber, 2017), there has been little related to preservice and in-service educators, in particular those not enrolled in an online course.

In an era with the onset of Covid-19, video communication is prevalent amongst higher education students for multiple reasons. As many traditional university and college students are accustomed to technology usage, they are very familiar with utilizing video in their personal and professional lives (Katemba & Ning, 2018). Flipgrid has proven to be a viable experiential learning tool for instructors to collaborate with learners in a multitude of learning and assessment activities (Carrie & Timothy, 2020). Further, Flipgrid provides a chance to cultivate personal connections with the instructor and course materials on a more frequent basis and within their personal comfort zone. Video also can impact the way an instructor assesses learning. Video recordings such as those in Flipgrid allow students to demonstrate mastery of content and flexibility to measure learning (Moran, 2018). Prior research indicated when students exhibited knowledge and skills through video recordings, instructors were inclined to deliver more constructive and accurate feedback (McLain, 2018).

Introduction to Flipgrid Usage

Flipgrid is a free, cloud-based video response tool that is accessible to users across multiple platforms and operating systems such as the internet, Android, and iOS. It may be used as a downloadable app from the Google or Apple Store on smartphones and tablets and allows for immediate participation (Kannan & Munday, 2017). For users without these technologies available, there is a website for internet browsers and a Google Chrome extension. This allows for a video response such as an original post or a reply to an instructor or peer to be recorded on any device (Mango, 2019). To be more accessible within higher education, Flipgrid may be embedded with LMS including Blackboard, Moodle, and Desire to Learn (D2L), Google Classroom, Schoology, and Canvas (Bartlett, 2018). These multiple points of access allow for Flipgrid to be used for formative and summative assessments. Prior research suggested Flipgrid is advantageous for demonstrations, exit tickets, and interviews, amongst other purposes (Petersen et al., 2020).

Flipgrid offers an intuitive and easy platform for video discussions. Using a camera and built-in microphone to create video posts, users can interact and collaborate with instructors and fellow learners. The instructor can initiate the activity immediately or schedule it for a future date. All students and instructors should understand how to make videos accessible from an ethical perspective to be more inclusive and allow everyone to participate in the video culture (Tirumala & Youngblood, 2021). The platform includes built-in captioning services in numerous languages for students with auditory challenges. Further, audio transcriptions are also available for instructors to share with students in an exported Microsoft Excel file. For students with hearing impairments, closed captions and transcriptions are important to allow for participation in any discussion and not increase feelings of isolation (Stoszkowski, 2018).

Flipgrid provides multiple points of access to assigned grids and topics. Using a smartphone camera, learners can capture an image of a unique (QR) code to be granted entry to a discussion ready for responses (Fahey et al., 2019). A second option is a grid or topic code disseminated via URL. If an instructor chooses to keep the discussion private, student Microsoft or Google email addresses affiliated with the institution need to be entered for access. However, instructors may choose to make the forum public so anyone with the QR code or hyperlinks may participate (Carrie & Timothy, 2020). As a shared learning space, all users can submit, access, and view all posts within a common area. In addition to the initial video posts, learners can continue to move the conversation forward with video responses. Prior studies indicated this helps to generate feedback loops within an asynchronous setting (Lowenthal & Moore, 2020; McLain, 2018).

To initiate a discussion, the instructor should record a welcome message to model expected behavior and encourage students to share related experiences, anecdotes, and opinions (Garrison, 2017). The asynchronous nature of Flipgrid allows learners more time to provide reflection and analysis. This lack of immediacy also allows for recognition of ideas that did not occur to them (Petersen et al., 2020). When an assigned discussion ends, instructors may export participation frequency, timestamps of recordings, length of videos, and names of each participant, as well as other data, to a Microsoft Excel document for grading purposes if desired.

With Flipgrid's unique ability to deploy diverse teaching methods, the CoI framework can be employed to analyze the platform related to computer-mediated communication. Further, implementation of Flipgrid based on the three components of CoI (cognitive presence, social presence, and teaching presence) would be especially beneficial to a successful learning community. To promote effective pedagogical practices using this framework, however, one must consider two factors: 1) the implementation of suitable digital tools to promote CoI and; 2) design for optimal learning (Kannan and Munday, 2017).

The Community of Inquiry (CoI) Framework

The Community of Inquiry (CoI) framework originated from the social constructivist model of learning processes in online and blended learning environments. The framework is based upon three components: 1) cognitive presence; 2) social presence; 3) and teaching presence. A community of inquiry is "a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding" (Garrison et al., 2000, p. 48). As depicted in Fig. 1, the CoI framework posits that effective online learning communities are developed with a blending of all three components and the relationship between them. Prior research demonstrated there is a significant relationship between these three components and student perceptions of learning, course satisfaction, instructor rating, and sense of social belonging (Arbaugh et al., 2008).

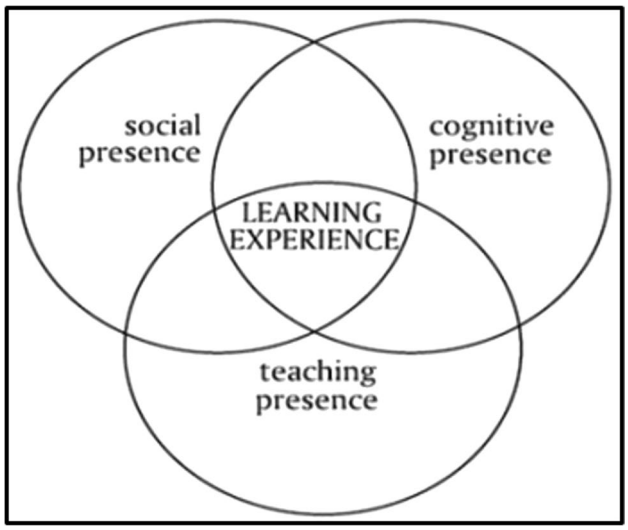

Fig. 1 Community of Inquiry Model (Garrison et al., 2000)

Garrison et al. (2000) defined cognitive presence as "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" and it is necessary to the development of critical thinking (p. 89). The process of reflective inquiry developed by John Dewey served as the roots of cognitive presence (Garrison et al., 2010). According to Dewey, this model contained practical value that deepened the meaning of reflective and critical-thinking experiences (Fiock, 2020). As such, the critical thinking approach employed is comprehensive and includes problem solving, intuition, and planning (Akyol & Garrison, 2008).

In this context, cognitive presence can be described as the process to seek out problems, appropriate content and opinions, and integrate one's own thoughts with a meaningful solution (Warner, 2016). Further, cognitive presence demands higher order thinking processes centered on critical thinking skills. This presence may be the most difficult to foster related to the social and teaching presence elements (Garrison & Arbaugh, 2007). Akyol and Garrison (2008) found the establishment and maintenance of cognitive presence in online and blended learning environments depended on the relationship between the three components. Prior research suggested cognitive presence and teaching presence significantly influenced learner perception of social

presence. These results indicated social and teaching presence directly contribute to the quality of a student's cognitive presence (Shea & Bidjerano, 2012).

Social presence is defined as "the ability of participants to identify with the community (e.g., course of study), to communicate purposefully in a trusting environment, and to develop interpersonal relationships by way of expressing their individual personalities" (Garrison 2009, p. 91). Positive social interaction is vital to offering a successful learning environment, especially during lengthy periods of time such as semester-long courses. Engaging and inclusive discourse provides learners a sense of social belonging and importance to the learning of others (Fiock, 2020). Social presence also offers the ability to enable positive and satisfying interactions that promote retention rates in higher education (Warner, 2016).

The impact of social presence can be a significant determining factor in student satisfaction with text-based communication. Further, positive correlation between social presence and learning perceptions has a significant influence on a learner's motivation, fulfillment with their development, and course activities (Van Wart et al., 2020). In the online learning environment, social presence refers to the ability to perceive other students as "real" and the projection of themselves as an authentic person. To be achieved, social presence needs to include open communication, effective expression, and group cohesion (Huang, 2015). There are multiple ways for instructors to promote social presence. Weekly check-in videos to recap learning content and preview the upcoming week, the design of collaborative activities, and virtual office hours can improve student perception of teacher involvement (Garrison, 2017). These, along with other strategies such as modeling behavior, exemplify the teaching presence component.

Teaching presence refers to the selection, structure, and dissemination of course content. Anderson et al., (2001, p. 5) stated "teaching presence is defined as the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes". There are three essential activities required by teaching presence: 1) design, 2) facilitation, and 3) direction of cognitive and social presences (Garrison, 2017). While teaching presence is initiated by the instructor, it does not assume that they are responsible for all of the teaching. If a course is designed to model the CoI framework, it will embrace and promote cognitive and social presences, therefore allowing learners to contribute to the teaching presence (Garrison, 2017).

Establishing teaching presence in an online course can be achieved in multiple ways. Learners themselves can become contributors of their own expertise, experience, and feedback to create a learning environment where roles are fluid amongst stakeholders (Warner, 2016). Instructors and peers may provide timely and supportive feedback within discussion forums and peer evaluations. Peer reviews within the CoI framework have been shown to encourage trust and personalized feedback (Cooper & Scriven, 2017). Instructors may also utilize teaching presence to provide learners with explicit and redundant instructions for all course assignments. Prior research indicated multiple channels with explanations of assignments positively impacted student understanding of instructor expectations (Anderson et al., 2001; Van Wart et al., 2020).

Methodology

Using a quantitative approach, the data set was divided into two variable groupings dependent upon course delivery modality. The quantitative data acted as a supportive measure to dictate future research and improve teacher preparation programs. Using this method also allowed the researcher to answer specific research questions to determine the effectiveness of utilizing Flipgrid to facilitate a community of inquiry in a preservice teacher educational technology course.

Students enrolled in an Online or hybrid section of an introductory preservice educational technology course at a private university in the Midwestern United States were invited to participate in this study. Human Subjects Review Board (HSRB) approval from the institution was obtained prior to data collection.

Instrument

With a goal to better understand the relationship between teaching modality and preservice teacher perceptions of discussion forum types, this quantitative investigation examined Flipgrid compared to text-based discussions. The investigation focused on three research objectives related to the Community of Inquiry framework: 1) Flipgrid as a tool to promote cognitive presence; 2) Flipgrid as a social presence tool; 3) Flipgrid as a tool to facilitate teacher presence. A fourth objective analyzed whether participants would use Flipgrid in their own teaching practice.

As an exploratory research project centered on student perceptions of this video communication platform, the survey included basic demographic questions and 10 statements focused on perceptions of using Flipgrid within the CoI framework. The final question asked participants whether they would use Flipgrid in their teaching practices. The survey included statements from previous studies related to CoI and Flipgrid (Gurjar, 2020). Items from a Lowenthal and Moore (2020) study of graduate students in an online course were adopted to provide further insight into respondent perceptions. More specifically, the

statements focused on the interactive nature of technology in the teaching and learning process. The prior studies established reliability and validity of the elements contained in this study.

Google Forms served as the research platform to collect student responses. The survey utilized a four-point Likert scale after each item that ranged from 1 (Strongly Disagree) to 4 (Strongly Agree). Demographic questions included gender, age, and licensure program of study. Non-probability sampling was used to create two groups for analysis. Respondents self-identified whether they were enrolled in the online or hybrid section of the course on the final question.

Procedures

The survey was disseminated to participants during the next to last week of each course section in an announcement posted in the university's LMS (Blackboard). The announcement was automatically emailed to each student and contained the informed consent, the purpose of the study statement, and hyperlink to the survey. The survey remained open for 14 days and students were sent a reminder announcement email at the beginning of the final week of class to complete the survey.

Participation was voluntary and no penalty occurred for those who exited the survey at any time prior to completion. As an incentive, respondents who completed the entire survey were awarded three extra credit points on the final course assessment. The institutional ethics committee granted ethical approval prior to the start of the study. All data collected remained confidential.

Upon completion, results were exported into a Google spreadsheet, then downloaded as a.csv file. The data file was uploaded into the Statistical Package for Social Sciences (SPSS) 26.0 and analyzed for descriptive and inferential statistics related to the likert scale response options and groupings.

Quantitative data was collected to answer the following research questions:

RQ1: Is there a significant difference between online and hybrid student perceptions of Flipgrid as a cognitive presence tool?
RQ2: Is there a significant difference between online and hybrid student perceptions of Flipgrid as a social presence tool?
RQ3: Is there a significant difference between online and hybrid student perceptions of Flipgrid as a teaching presence tool?
RQ4: Is there a significant difference between online and hybrid student likelihood to use Flipgrid in their teaching practice?

Participants

Respondents were undergraduate preservice teachers enrolled in an introductory educational technology course at private Midwestern university and divided into two groups based upon the learning environment. One group received asynchronous online instruction with the other enrolled in hybrid sections that featured an asynchronous online component and a weekly 75-min face-to-face class meeting. All participants took the course during the fall, spring, or summer semesters of the same academic year and were taught by the same instructor.

Both groups responded to the identical discussion prompts to ensure consistency. Initially, students in both courses utilized Flipgrid for an introductory asynchronous video-based discussion with peers and the instructor, as well as post responses to the recordings of classmates. Students were provided a unique grid code URL via an instructor announcement to enter the video discussion forums for their course. Over the duration of the course, students utilized Flipgrid five additional times for a total of six asynchronous video-based discussions. In addition to video discussions, respondents also completed four text-based discussions related to course content.

In total, 76 preservice teachers completed the survey. The online sections featured a total of 46 students, of which 36 (78%) completed the survey, compared to the hybrid sections with a combined enrollment of 58, yielding 40 (69%) responses. Of respondents who shared their gender, females comprised the majority ($N=56$; 74%), while males totaled 26% ($N=20$). The mean age was 25 years old. Adolescent to Young Adult ($N=34$; 45%) was the most popular licensure area program, followed by Middle Grades ($N=13$; 17%), Early Childhood ($N=12$; 16%), Intervention Specialist ($N=11$; 15%), and Early Childhood Intervention Specialist ($N=6$; 8%).

Results

RQ1

The first research question analyzed student perception of Flipgrid to facilitate cognitive presence in discussion boards compared to text-based. A Levene's test of homogeneity and an independent samples *t* test investigated the mean differences of the online and hybrid sections. Data analysis found significant differences between groups for multiple statements (Table 1). The test of homogeneity ($F=16.716$, $p=0.000$) indicated unequal variances about whether Flipgrid enhanced knowledge of the subject matter. Online students were significantly less likely to agree

Table 1 Student perceptions of Flipgrid as a cognitive presence tool

Compared to text-based discussion forums…	N	Online		Hybrid		*t*-test	
		M	SD	M	SD		*p*
…Flipgrid enhanced my knowledge of the subject matter	76	2.61	.60	2.88	.40	-2.23*	.030
…using Flipgrid positively affected my motivation for the subject matter	76	2.56	.50	2.83	.47	-2.46*	.017
…Flipgrid video discussions supported the learning process	76	2.94	.23	2.93	.27	.38	.737

*$p < .05$. **$p < .01$

1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

($M = 2.61$, $SD = 0.60$) compared to those in the hybrid section ($M = 2.88$, $SD = 0.40$), $t(74) = -2.23$, $p < 0.04$, $d = 0.53$.

Levene's test of homogeneity ($F = 12.440$, $p = 0.001$) also indicated unequal variances between groups and motivation for the subject matter. Online students ($M = 2.56$, $SD = 0.50$) were statistically less likely to feel Flipgrid positively affected motivation than the hybrid group ($M = 2.83$, $SD = 0.47$), $t(74) = -2.46$, $p < 0.02$, $d = 0.57$.

To further analyze the significant independent samples *t*-test results above, Cohen's *d* examined the extent of the differences of the means. The effect size for these statements fell into Cohen's medium effect size category ($d = 0.50$) (Cohen, 1988). Data analysis yielded no relationship of Flipgrid supporting the learning process.

Based on the data in Table 1, more than 79% ($N = 60$) of respondents indicated Flipgrid enhanced their knowledge of the subject matter compared to text-based discussions. However, while the majority of online learners ($N = 34$; 85%) suggested a positive motivation for the subject matter, less than half ($N = 20$; 44%) of the online group agreed. Additionally, 93% of all respondents felt Flipgrid supported the learning process.

RQ2

Objective two investigated student perceptions of Flipgrid's abilities to enhance social presence. An independent samples *t* test revealed no significant differences in the mean scores (Table 2). The majority of respondents ($N = 64$; 84%) and hybrid students ($N = 36$; 90%) reported that Flipgrid made them feel closer to their classmates, while 88% ($N = 67$) agreed video discussions helped them get to know their classmates better than text-based discussions. The vast majority of students ($N = 70$; 92%) agreed Flipgrid helped improve social presence.

RQ3

Objective three examined student perceptions of Flipgrid to increase teaching presence compared to text-based discussions. An independent samples *t* test found a significant difference in the perceptions for online learners ($M = 2.72$, $SD = 0.45$) and the hybrid group ($M = 2.95$, $SD = 0.22$), $t(74) = -2.73$, $p < 0.01$, $d = 0.37$, related to perceived instructor involvement in the course. The results of a Cohen's *d* test ($d = 0.53$) indicated a small effect (Cohen, 1988).

Levene's test of homogeneity ($F = 12.440$, $p = 0.001$) yielded unequal variances between learning environment and perceived usefulness of instructor feedback. Online student responses ($M = 2.67$, $SD = 0.48$) indicated they were statistically less likely to perceive Flipgrid positively than preservice teachers in the hybrid group ($M = 2.95$, $SD = 0.22$), $t(74) = -3.26$, $p < 0.01$, $d = 0.75$. To further investigate, a Cohen's *d* test ($d = 0.75$) suggested a medium effect (Cohen, 1988). Data analysis revealed no other significant relationship in the final two statements.

Respondents did indicate positive feelings of Flipgrid to facilitate teaching presence. The majority ($N = 64$; 84%) felt the platform made the instructor seem more involved, while 81% ($N = 62$) indicated it made instructor comments more useful. While 85% ($N = 34$) of the hybrid group found video allowed them to feel closer to the instructor, 28% ($N = 26$) of

Table 2 Student perceptions of Flipgrid as a social presence tool

Compared to text-based discussion forums…	N	Online		Hybrid		*t*-test	
		M	SD	M	SD		*p*
…the use of Flipgrid made me feel closer to my classmates	76	2.83	.38	2.83	.47	.09	.931
… Flipgrid helped me to get to know my classmates better	76	2.83	.38	2.93	.27	-1.21	.231
…Flipgrid helped improve social presence (i.e., the sense that others are "real" and "there")	76	2.89	.32	2.95	.22	-.96	.340

*$p < .05$. **$p < .01$

1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Table 3 Student perceptions of Flipgrid as a teaching presence tool

Compared to text-based discussion forums…	N	Online		Hybrid		*t*-test	
		M	SD	M	SD		*p*
… Flipgrid made me feel the instructor was more involved in the course	76	2.72	.45	2.95	.22	-2.73*	.009
…feedback comments by the instructor in Flipgrid were more useful	76	2.67	.48	2.95	.22	-3.26**	.002
… Flipgrid made the instructor seem more approachable	76	2.83	.38	2.88	.40	-.46	.645
…Flipgrid made me feel closer to the instructor	76	2.72	.45	2.83	.47	-.99	.324

*$p < .05$. **$p < .01$

1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

those online disagreed. Lastly, 87% ($N = 66$) of respondents agreed or strongly agreed Flipgrid made the instructor seem more approachable (Table 3).

RQ4

The final research question explored preservice teachers' likelihood to integrate Flipgrid into their teaching practice. An independent samples *t* test revealed a significant difference between groups. Hybrid learners ($M = 2.85$, $SD = 0.86$) were more likely than those online ($M = 2.33$, $SD = 0.59$), $t(74) = -3.02$, $p < 0.01$, $d = 0.71$, to see themselves using the technology in their own classroom. Cohen's *d* ($d = 0.71$) indicated a medium effect (Cohen, 1988).

Respondents indicated mixed feelings pertaining to the research question. Of all participants, 50% ($N = 38$) agreed or strongly agreed they would incorporate Flipgrid. However, 72% ($N = 26$) online disagreed compared to 70% of hybrid participants ($N = 28$) who agreed.

Discussion

This quantitative investigation revealed a significant relationship between preservice teacher perceptions of Flipgrid compared to a text-based discussion in preservice educational technology courses and the learning environment. While prior research examined video discussions in online higher education courses, the results further extend the literature by also looking at hybrid learning environments with a face-to-face component. Further, this adds to the literature by comparing mean perception scores and finding hybrid students are statistically more likely to have higher perceptions compared to online learners.

The success of face-to-face and online learning starts and finishes with interaction (Bartlett, 2018). Within higher education, asynchronous text-based discussions continue to serve as the primary medium of interaction today (Serembus & Murphy, 2020). For faculty, a benefit of discussion forums is the ability to incorporate media to provide a space for minimizing the transaction distance between learners (Bali & Liu, 2018). These platforms, such as Flipgrid, allow students to interact and engage with peers and instructors to incorporate each of the three components of the Community of Inquiry (CoI) framework (Cooper & Scriven, 2017; Garrison & Arbaugh, 2007).

RQ1 indicated the learning environment played a significant role in respondent perceptions of Flipgrid to promote cognitive presence. These findings indicated hybrid sections with a weekly on-campus meeting were significantly more likely to perceive Flipgrid as an effective way to increase their motivation and knowledge of course content compared to text-based discussions. Specifically, hybrid students were significantly more likely to state that Flipgrid enhanced their knowledge of the subject matter. Further, those in the hybrid learning environment were significantly more likely to believe Flipgrid positively affected their motivation toward the subject matter. Part of this may be attributed to the social element added by a consistent face-to-face meeting which allowed for additional relationship development. This would be further evidence of the role group cohesion plays to establish cognitive presence (Lowenthal & Moore, 2020). In keeping with prior research related to an online environment, cognitive presence was the most difficult to create but allowed students to incorporate their personal thoughts and opinions in a worthwhile setting (Garrison & Arbaugh, 2007; Warner, 2016).

The second research question examined perceptions of Flipgrid to promote social presence. Statistical analysis revealed no significant relationships, which differs from previous research that indicated Flipgrid was viewed as beneficial in the creation of a learning community where students are less focused on task-oriented communication (Carrie & Timothy, 2020; Miskam & Saidalvi, 2019). Respondents from both groups indicated Flipgrid helped to perceive their classmates as a "real" and authentic person. These findings demonstrate Flipgrid's ability to promote key elements of the social presence component such as effective expression

and group cohesion (Huang, 2015). Respondents also indicated Flipgrid helped them to get to know their classmates better and feel closer as well. These findings can be relatable to prior research that found a learners' sense of belonging and ability to engage in positive interactions promote student retention (Fiock, 2020).

RQ3 suggested Flipgrid is an effective medium to promote the teaching presence component of the CoI framework. However, the learning environment played a significant role in preservice teacher perceptions of an instructor. Specifically, those online were statistically less likely to perceive their instructor as more involved with the course. Additionally, they were significantly less likely to feel instructor comments were useful. The findings demonstrated how collaboration between instructors and students support teaching presence. When used appropriately, these interactions permit stakeholders to engage and collaborate in new ways not previously available in text-based discussions (Jones-Roberts, 2018; Mahmoudi & Gronseth, 2019; Moore, 2016). Further, Flipgrid allows for the development of teaching presence for learners as well. In a video discussion, learners visually and orally contribute their own experiences and knowledge to project teaching presence (Garrison, 2017).

The final research question found the learning environment was a significant variable between groups and their likelihood to use Flipgrid in their own teaching practices. In particular, those in the hybrid course sections would be more inclined to implement the technology. However, Flipgrid may be utilized for more than just discussion forums in the teaching and learning process. For example, educators may also provide learners with explicit course instructions and multiple channels to measure student understanding of content and instructor expectations. Flipgrid can also foster the teaching presence component of the CoI Framework by using peer evaluations to develop trust and provide customized feedback (Cooper & Scriven, 2017).

This research study investigated preservice teacher perceptions of Flipgrid compared to text-based discussions. As the Covid-19 pandemic forced higher education and teacher preparation programs to adopt multiple teaching modalities, faculty sought out new technologies and strategies for online learning. For the successful implementation of an educational technology, it is essential any new platform provides a unique contribution to the learning process. While prior studies examined Flipgrid in primarily online learning environments, this investigation examined preservice teachers in online and hybrid sections of an introductory educational technology course to gain insight on their perceptions. This research aimed to reveal whether perceptions of Flipgrid to develop a community of inquiry were significantly dependent upon the learning environment.

Limitations

Participants were limited to preservice K-12 teachers enrolled in a teacher education program at a rural, medium-sized private university. As such, responses did not include teaching candidates from public universities or those located within urban centers. In addition, all respondents lived in the same state and lacked geographic diversity. It is possible that preservice teachers from other regions of the country perceive video discussions differently.

Conclusion

To better understand perceptions of video discussions, the researcher aimed to explore preservice teacher perceptions of the effectiveness of video discussions in fully online and hybrid courses compared to text-based discussions. The findings suggest that while both groups indicated positive perceptions overall, online learners were significantly less likely to perceive video discussions as effective related to two of the three components—cognitive presence and teaching presence—of the CoI framework. As more institutions of higher education choose to move courses online voluntarily or otherwise, it is important for preservice teacher educators and researchers to understand the variables affecting student perceptions of cognitive presence, social presence, and teaching presence in their online and blended learning environments.

Due to participants coming from one Midwestern university teacher education program, the results should not be generalized. However, few studies are available related to student perceptions of video discussions based upon the course learning environment. Most prior research centered on learners enrolled in fully online courses without input from participants in hybrid or seated students. For instance, is there a relationship between the number of in-person class meetings and perceived value to the use of video discussions? Why did online students report significantly lower levels of knowledge and motivation compared to those in a hybrid setting? Why did learners in the hybrid course perceive their instructor as more involved and provided more useful feedback? Lastly, why are those enrolled in a hybrid course significantly more likely to use Flipgrid in their own teaching practices? Responses suggested video discussion boards had a positive effect on each of the three CoI components.

Responses demonstrate additional research is needed on video discussions and class learning environments. Are there relationships between other learning environments such as online asynchronous or face-to-face courses related to any of the three CoI components? Additionally,

are respondent perceptions of video descriptions to foster a community of inquiry dependent upon if they are current or preservice educators? This investigation is an initial pursuit to examine variables related to the usage of Flipgrid compared to text-based discussion. With an evolving educational landscape and the increased prevalence of video tools, student perspectives and preferences may change over time.

Lastly, analysis related to the discrepancy between groups and their perceptions warrants further investigation. Qualitative analysis in the form of interviews or focus groups can assist in continued exploration of these findings to understand preservice teachers' perceptions and the role it plays in creating a Community of Inquiry in teacher preparation courses. During the qualitative data collection, it would also be important to better understand why those in an online course section would be significantly less likely to implement Flipgrid into their own teaching practices. Continued research on these perspectives would be helpful to ensure students in all learning environments are provided differentiated assessments to promote multiple means of participation and engagement.

Data Availability Data is available upon request.

Declarations

Conflict of Interests The author has no conflicts of interest to declare or financial interest to report. The author also has seen and agreed with the contents of the manuscript. The author certifies that the submission is original work and is not under review at any other publication.

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