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Accessibility and Engagement: Expectations and Experiences of Graduate Students in Blended–Synchronous Courses

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Abstract

To reach more students, many colleges are using technology to teach courses via a blended learning model, which allows students to attend class face to face or through a video network. The blended–synchronous format (a blended learning model) is defined as the synchronous instruction of face-to-face and remotely located students. Although it provides flexibility for students in terms of location, the blended–synchronous model also has challenges, including accessibility. This study aimed to understand the expectations and experiences of graduate students who attend blended–synchronous courses. The authors surveyed students in a midwestern, mid-sized research university, who were enrolled in programmes that use the blended–synchronous model. The survey focused on their experiences with, and expectations for, their typical mode of attendance. An analysis of quantitative data using descriptive statistics and independent samples *t*-tests determined whether there were significant differences between students who attended in person or via a video network (VN) regarding their ideal expectations and actual experiences with classroom engagement. Authors coded open-ended responses to capture and interpret key themes. Results indicated students did not experience significant differences in their ideal or actual classroom engagement regardless of the mode of attendance, although there were significant differences in actual experiences of accessibility—VN students are less able to hear and see the instructor and classmates. Additionally, a sense of "us versus them" emerged between the two groups, with VN students struggling to participate actively. Systems need to be developed to increase participation and social interaction in blended–synchronous courses.

Keywords: blended–synchronous learning; graduate students; accessibility; engagement

Introduction

Recent improvements in technology have had significant effects on the development and availability of current education delivery models (Lakhal et al., 2017). Blended learning models have become quite popular, especially as many colleges and universities face declining student enrolment (Juszkiewicz, 2017). These models can be a blend or hybrid of in-class, online, and distance education options, as well as synchronous and asynchronous opportunities (Lakhal et al., 2017). Blended models can also focus on blending instructional delivery media, instructional methods, or online and face-to-face instruction (Graham, 2006).

This area of study can be complicated because there is no single definition of blended learning (Lakhal et al., 2017). The terms “hybrid” and “blended” are often used to mean synchronous instruction of both face-to-face and remotely located students (Detienne et al., 2018; Osguthorpe & Graham, 2003) and can be termed a blended–synchronous learning environment (Osguthorpe & Graham, 2003). The blended–synchronous format is different from the hyflex format currently used in colleges and universities across the United States (Miller et al., 2021). The hyflex format allows students and faculty to have flexibility in how they attend class, which may be by Zoom, or being in the physical classroom (Miller et al., 2021). Blended–synchronous courses often do not allow such flexibility—students are required to choose their method of class attendance before they start the class (Szeto & Cheng 2016). We should note that although our research occurred before the COVID-19 pandemic, we recognise that this teaching methodology will become more important with the growth of hyflex learning models.

An instructor might choose to design classes in a blended–synchronous format instead of entirely online or face to face for a variety of reasons. First, a blended–synchronous format increases course accessibility (Raes et al., 2020; Romero-Hall & Vincentini, 2017; Wang et al., 2017; Zydney et al., 2019).

Second, blended–synchronous courses enable students who reside in remote areas, with no reasonable transportation options, to attend class without having to be physically present (Zydney et al. 2019). There’s additional flexibility for students who live within a reasonable driving distance of campus, but occasionally find themselves too ill to attend (Wang et al., 2017). Although these students might be too ill to attend class in person, they could be well enough to attend via distance, with the added benefit of not spreading disease. We have used this flexibility in graduate courses to allow working professionals to attend conferences without missing class.

Third, providing blended–synchronous courses relates to increasing enrolment (Abdelmalak & Parra, 2016; Butz & Askim-Lovseth, 2015; Ørngreen et al., 2015; Wang et al., 2017; Wiles & Ball, 2013). College enrolment has declined in recent years (Juszkiewicz, 2017), but the blended–synchronous model can help to increase higher-education enrolments. When there are more options for attending class face to face or at a distance, colleges and universities can engage a larger pool of prospective students (Abdelmalak & Parra, 2016; Butz & Askim-Lovseth, 2015; Ørngreen et al., 2015; Wang et al., 2017), including those with families and full-time jobs (Raes et al., 2020; Romero-Hall & Vicentini, 2017).

Courses provided through a blended–synchronous model also enable more social interaction for off-site students than do traditional asynchronous online classes (Romero-Hall & Vicentini, 2017). Students tend to be more engaged with this blended–synchronous model than they are with asynchronous online courses because there are often more opportunities to connect with other students in the class (in-class and distance) and with the instructor (Lakhal et al., 2017; Wang et al., 2017). This increase in social interaction can have a positive effect on student retention and education outcomes (Allen et al., 2008), especially for more marginalised students (Yeh & Inose, 2003).

However, there are challenges in using a blended–synchronous model. Technology issues are often deemed to be the largest hurdle for students (Conklina et al., 2017; Romero-Hall & Vicentini 2017; Wang et al., 2017; Zydney et al., 2019). Off-site or distance students often struggle with connection issues that prevent them from accessing the classroom (Conklina et al., 2017). When they do connect to the classroom, they can encounter visual and audio issues (including the video and audio freezing), or having a substantial delay (Conklina et al., 2017). There are often no options for technical support when technical issues arise, leaving students to deal with their issues alone (Romero-Hall & Vicentini, 2017; Wang et al., 2017). In-class students who attend blended–synchronous courses also feel that technology issues hamper their

learning because instructors need to take time out of the classroom to troubleshoot distance issues (Szeto & Cheng, 2016).

Instructors who offer courses via a blended–synchronous model promise accessibility but, paradoxically, access to see and hear class, and to fully engage in class, is limited for distance students. Class participation for distance students is limited, even with the assistance of technology. It is difficult for them to participate fully in class without being able to see specific social cues, such as head nods and smiles, or to hear classroom discussions due to audio issues (Romero-Hall & Vicentini, 2017; Wang et al., 2017). Students who value social interaction can find this delivery model less engaging and find it more difficult to receive feedback from their instructor or fellow students (Romero-Hall & Vicentini, 2017). Distance students, their in-class counterparts, and the course instructor all have more difficulty with interactions, connections, and limited communication with this delivery model (Romero-Hall & Vicentini, 2017). Distance students attending these courses often feel more isolated (Wang et al., 2017).

While implementing a blended–synchronous learning environment brings many known benefits and challenges, this increased feeling of isolation, coupled with the increased number of courses in this mode, shows there's a need to investigate student experience. Romero-Hall and Vincentini (2017) further support this by noting that few studies have investigated the experience of students enrolled in these blended–synchronous courses.

Purpose

This study aimed to understand the expectations and experience of graduate students who attend blended–synchronous courses. Specifically, we sought to understand the extent to which the expectations and experience of in-person and distance students vary in blended–synchronous courses.

The following research questions guided the study.

1. To what extent do **ideal expectations** for class engagement vary between video network (VN) and in-person students enrolled in blended–synchronous courses?
2. To what extent do **actual experiences** of class engagement vary between VN and in-person students enrolled in blended–synchronous courses?

Method

In this study, we employed an anonymous, one-time online survey to collect data relating to graduate students' ideal expectations and actual experience. The site for this study was a mid-sized research university located in the midwestern region of the United States. Because the region served by the institution is primarily rural, the university offers a variety of course attendance modes, including in-person, asynchronous online, and blended–synchronous. The blended–synchronous courses involve regularly scheduled class sessions that are attended by students who can be physically present in the university classroom, and those who attend via video network (VN) from remote locations. When they register for a blended–synchronous course, students indicate whether they will attend via video network or in-person—and then they consistently use that chosen mode. Two of the institution's disciplinary areas—education and public health—offer most of their graduate programme courses as blended–synchronous courses.

In these programmes, in-person student classrooms have an instructor's desk at the front of the room, and tables throughout. The classrooms have instructor-controlled audio and video technology that allows VN students to see and hear all aspects of classroom presentations and discussions, and for in-person students to hear and see VN students. Equipment includes multiple large-screen television or projection screens facing both the instructor and students so everyone

can see the instructional materials, and there are speakers throughout the room for audio from VN students. Classrooms also have multiple remote-controlled video cameras that can be directed to show room perspectives, including the instructor, in-person students, and classroom whiteboards. Omnidirectional microphones placed throughout the classroom broadcast dialogue among students and instructors. When they connect remotely to the classroom, VN students see both the selected camera view and any presentations on the instructor's computer.

Procedure

Following approval by the Institutional Review Board, in early fall 2019 we contacted potential participants via email to request participation in an anonymous online survey. Potential participants received reminder emails at 1- and 2-week intervals. The survey was designed to capture students' ideal expectations and actual experience about specific issues relating to attending class via their typical mode of attendance—either in the physical classroom (in person) or via VN. Students were asked to indicate their level of agreement on a five-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5), with statements about their ideal expectations and actual experience of classroom accessibility (the ability to see and hear and be seen and heard, effective facilitation of classroom technology etc.) and classroom engagement and learning (i.e., active class participation, asking questions, contributing without feeling they are interrupting). Participants responded to open-ended questions to share other thoughts about their ideal expectations for classroom engagement and their actual experience, and what it means to be a good student. Finally, we collected demographic information that included gender identity, race/ethnicity, current and past disciplinary preparation, and the number of courses they had completed in their programme.

Participants

Participants were graduate students who were enrolled in education or public health programme areas in the fall of 2019, and who had completed at least one course in their programme. We invited 67 students to participate, and 31 chose to complete the survey—giving us a response rate of 46.3%. Of the 31 participants, 16 (52%) usually attended class in person and 15 (48%) usually attended via VN. As is typical in these graduate programmes, 75% of respondents identified as white, and 91% identified as women.

Data analysis

Analysis of quantitative data using descriptive statistics and independent samples *t*-tests determined whether there were significant differences between in-person and VN students regarding their ideal expectations and actual experience of classroom engagement.

Researchers coded qualitative data to capture and interpret key themes relating to participants' ideal expectations and actual experience in blended–synchronous courses. Initially, we used holistic coding (Saldaña, 2015) to identify major concepts in the data. Next, we used pattern coding (Saldaña, 2015) to identify meaningful groups of codes and major themes in the data. We then identified excerpts that provided helpful illustrations and in-depth explanations of participant perceptions.

Findings

1. Difference in **ideal expectations** between in-person students and students attending via VN.

Descriptive statistics identified participants' ideal expectations for class accessibility and engagement (Table 1). Participants ranked their level of agreement on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree) for the ideal expectations relating to each statement.

Table 1 shows the mean score and standard deviation for participants' ideal expectations relating to each statement for students who attended via VN, and students who attended in the physical classroom (in person). Overall, mean scores for ideal expectations regarding both accessibility and engagement were very high, ranging from 4.67 to 5.00 for all statements among VN students, and 4.69 to 5.00 for all statements among in-person students.

Table 1 Descriptive statistics and T-test results for ideal expectations by mode of attendance

Ideal expectations	Group					
	VN			In person		
	M	SD	n	M	SD	n
Accessibility expectations						
I will be able to clearly see and hear my instructor	5.00	.00	15	5.00	.00	16
I will be able to clearly see and hear my classmates	4.80	.41	15	4.94	.25	16
My classmates will be able to clearly see and hear my instructor	4.93	.26	15	5.00	.00	16
My classmates will be able to clearly see and hear me	4.67	.49	15	4.94	.25	16
My instructor will be able to clearly see and hear me	4.73	.46	15	4.88	.34	16
My instructor will be able to clearly see and hear my classmates	4.87	.35	15	4.88	.34	16
My instructor will effectively facilitate interactive video technology	4.93	.26	15	4.69	.70	16
All campus-operated hardware and software will work for class	4.93	.26	15	5.00	.00	16
Engagement expectations						
I will actively participate in class discussions	4.69	.48	13	5.00	.00	12
My classmates will actively participate in class discussions	4.69	.48	13	4.92	.29	12
I will be able to ask questions if I have them	4.92	.28	13	4.92	.29	12
My classmates will be able to ask questions if they have them	4.92	.28	13	4.92	.29	12
I will be able to contribute without feeling like I am interrupting	4.69	.48	13	4.75	.45	12

Note: Maximum score of agreement = 5.00; higher score indicates a higher level of agreement with the statement.

We conducted independent-samples *t*-tests to compare the ideal expectations for class accessibility and engagement of VN students and in-person students. We found no significant differences between the groups in ideal expectations for accessibility. These results indicate students have similar expectations for seeing and hearing instructors and classmates, having instructors and classmates see and hear them, and having technology facilitated effectively. With

regard to expectations for class engagement, we found no significant differences between the groups concerning the students or their classmates being able to ask questions and contribute without feeling as though they are interrupting. There was a statistically significant difference in responses to: "I will actively participate in class discussions," with in-person students reporting higher expectations (M = 5.00, SD = .00) than VN students (M = 4.69, SD = .48), $t(23) = 2.22$, $p = 0.037$.

In response to the open-ended question: "What else would you like us to know about your expectations for **ideal** classroom engagement?", both VN and in-person students noted that respectful, thoughtful discussions and collaborative learning characterised ideal classroom engagement. Notably, however, many of the VN students specifically identified ideal expectations relating to the engagement of distance learners. The following responses illustrate this finding.

> Ideally, as a distant student we would be fully engaged in the classroom and discussions . . . we would have a way to speak and ask questions that would not be interrupting or seen as halting conversation.
>
> A mixture of class activities that involve collaboration between [VN] and in-class students. This helps with getting to know my classmates better and build a stronger support system.

Video network students further identified the effective use of classroom technology as an ideal, with one student explicitly stating: "In an ideal setting, the instructor would speak clearly near the microphones." However, no in-person students identified technology-specific ideal expectations, or expectations relating to collaboration with VN students.

2. Difference in **actual experience** between in-person students and students attending via VN.

Descriptive statistics identified participants' actual experience with class accessibility and engagement. Table 2 shows the mean score and standard deviation for participants' actual experiences with class accessibility for VN and in-person students, while Table 3 shows the mean score and standard deviation for participants' actual experiences with classroom engagement. Overall, mean scores for actual experience among in-person students were very high for accessibility, ranging from 4.50 to 5.00; and high for engagement, ranging from 4.00 to 4.58. Mean scores for VN students were moderate for accessibility, ranging from 3.20 to 4.00, and moderate-to-high for engagement, ranging from 3.77 to 4.62.

Table 2 Descriptive statistics and T-test results for actual experiences of accessibility by mode of attendance

Actual accessibility experiences	Group						95% CI for mean difference		
	VN			In person					
	M	SD	n	M	SD	n		t	df
I will be able to clearly see and hear my instructor	3.93	1.16	15	4.94	.25	16	.396, 1.613	3.38**	29
I will be able to clearly see and hear my classmates	3.20	1.37	15	4.56	.63	16	.586, 2.139	3.59**	29
My classmates will be able to clearly see and hear my instructor	4.00	1.13	15	4.69	.60	16	.027, 1.348	2.13*	29
My classmates will be able to clearly see and hear me	3.67	1.11	15	4.50	.73	16	.146, 1.520	2.48**	29
My instructor will be able to clearly see and hear me	3.87	.99	15	4.88	.34	16	.471, 1.545	3.84**	29
My instructor will be able to clearly see and hear my classmates	4.00	1.13	15	4.81	.40	16	.195, 1.430	2.69**	29
My instructor will effectively facilitate interactive video technology	3.80	.86	15	4.69	.70	16	-.368, .893	.0.85	29
All campus-operated hardware and software will work for class	3.67	.90	15	5.00	.00	16	-.197, 1.114	1.43	29

* p < .05., ** p < .01

Note: Maximum score of agreement = 5.00; higher score indicates a higher level of agreement with the statement.

Table 3 Descriptive statistics for actual experiences of engagement by mode of attendance

Actual engagement experiences	Group					
	VN			In person		
	M	SD	n	M	SD	n
I will actively participate in class discussions	4.38	.51	13	4.42	.52	12
My classmates will actively participate in class discussions	4.15	.56	13	4.00	.60	12
I will be able to ask questions if I have them	4.62	.51	13	4.58	.67	12
My classmates will be able to ask questions if they have them	4.54	.66	13	4.58	.52	12
I will be able to contribute without feeling like I am interrupting	3.77	1.24	13	4.17	.84	12

Note: Maximum score of agreement = 5.00; higher score indicates a higher level of agreement with the statement.

Independent samples *t*-tests compared the actual experience of accessibility and class engagement for VN and in-person students. As shown in Table 2, there were statistically significant differences in six questions relating to accessibility for VN and in-person students. Our results indicate that VN students report significantly lower levels of agreement, with statements about their ability to see and hear the instructor and their classmates, and the ability of the instructor and their classmates to see and hear VN students. Results for actual experience of classroom engagement were not significant. This indicates VN and in-person students had similar experience of their own and their classmates' active participation in class discussions, their own and their classmates' ability to ask questions, and their ability to contribute without feeling as though they are interrupting.

In response to the open-ended question: "What else would you like us to know about your expectations for **actual** classroom engagement?", both in-person and VN students reported that technical issues can be a major impediment. These issues included inconsistent video and audio quality, difficulties with connecting or staying connected, and instructors not knowing how to use the technology effectively. For VN students, these technical issues led to feelings of being on the margins or interrupting during class discussions, as illustrated by one student's response: "As a VN student, I still often feel either like I am interrupting or being looked at as if I'm not contributing enough." A sense of disconnection further compounded these feelings of being on the margins of the class between VN students and in-person students, with both VN and in-person students either calling out the disconnection directly or using words such as "us" and "them" to describe themselves and classmates who attend via other modes. One VN student even noted:

> I feel like often the class is split into "us" (those on [VN]) and "them" (those in the classroom). I have had classes from professors that if I saw them on campus, I wouldn't recognize them because I have never seen their face. When I started grad school, I was hoping for more engagement from distance students, but that is often not the case from what I have seen.

Note that this student specifically calls out not only the disconnection with classmates, but also a disconnection with instructors—even stating: "I have never seen their face". Other VN students also perceived that those instructors do not engage VN students in the same way as they do with

in-person students. Others noted that their experience varied, depending on their instructor, as illustrated in the following quotes.

> After a few years of [VN] classes, I find that some classes (to include instructors and other students) are very good at finding the balance of engagement with [VN] and traditional students and others are not.

> Some instructors hold themselves accountable for their actions and words while others only share their expectations but do a poor job modeling them in the classroom.

Participants also responded to the open-ended question: "What does it mean to you to be a good student?" The most common responses (from both VN and in-person students) included being an engaged, active learner who contributes to class discussion and engages with classmates. This is an important counterpoint to the actual experience of VN students, in particular, who reported having difficulty with meaningful engagement or feeling as though they were interrupting when they attempted to contribute to discussion.

Discussion

As noted previously, the benefits of blended–synchronous learning include increased accessibility for students in remote locations, or those who could not attend class in person (Zydney et al., 2019). However, previous researchers have noted increased difficulty with interactions and connections, and limited communication between distance students, their in-class counterparts, and the course instructor (Romero-Hall & Vicentini, 2017). The results of our study confirmed the communication challenges found previously with blended–synchronous courses—VN students reported significantly lower levels of agreement about being able to see and hear their classmates and instructor, and being able to be seen and heard by their counterparts and the instructor. Notably, while a majority of participants indicated strong agreement (M = 5.00, N = 31) regarding their ideal expectations that "I will be able to clearly hear and see my instructor," agreement about actual experiences of VN students clearly hearing and seeing their instructor (M = 3.93, SD = 1.16) was significantly lower than those of in-person students (M = 4.94, SD = .25), $t(29) = 3.38$, $p = 0.005$. Qualitative data indicated that students feel marginalised by technical issues. If blended–synchronous delivery is used in classes, the technology provided by the university must be reliable, and instructors must be thoroughly trained and prepared to use the technology effectively. Furthermore, VN students need to have clearly communicated requirements for hardware and software to effectively access the class, and a real-time help desk for troubleshooting.

Our study results did not reveal significant differences in actual experience of class engagement. Interestingly, however, the mean for both groups regarding, "I will be able to contribute without feeling like I am interrupting", was relatively low compared with most experiences of class engagement. This is probably due to the nature of blended–synchronous discussions that require students to actively "unmute" to speak, creating a delay in contributions. This sense of interrupting creates a dissonance, given that students also identify that ideal students actively engage in discussion.

The qualitative data further revealed an "us versus them" mentality emerging between in-person and VN students. Romero-Hall (2017) noted that students struggle to make social connections when they cannot view their classmates' social cues, as can be the case when using a video network. The "us versus them" mentality, and the sense of interrupting, make it difficult to create a sense of community among all students in blended–synchronous courses. Therefore, it is necessary to create classroom norms, and to use technology tools effectively, to support an environment that is equally accessible to VN and in-person students. Detienne et al. (2018) note that faculty must have pedagogical training on pedagogy that relates to blended–synchronous

teaching, and includes developing and sharing expectations for students in class. For example, all students, including those attending in person, log in to the virtual classroom so all students can be seen (Romero-Hall & Vicentini 2017). Many tools, such as collaborative digital whiteboards and virtual breakout rooms, also enable real-time interaction between VN and in-person students in virtual spaces. Effective planning and use of these collaborative tools can level the playing field for all students to engage meaningfully with one another, the instructor, and course content.

Limitations and implications for future research

Although the response rate of 46.3% was promising, the overall sample size for this study was small due to the limited number of students in programmes that offer blended–synchronous courses. In future we intend to collect more data to explore the experiences of graduate students in these courses, based on their modes of attendance. As is typical of the population of the programmes included in this study, the respondent population comprised predominantly white (75%) respondents who identified as women (91%). Another area for future study is to identify practices that could increase the sense of engagement (Wang et al., 2017) and decrease the VN students' sense of interrupting. Lakhal et al. (2017) noted that managing the relationships between VN and in-person students is difficult. They note that the instructor has several tasks to pay attention to—from the content they are delivering, to their students, to the technology—all of which affect engagement. Future research is needed to help provide insight into finding the balance of student engagement and learning.

Conclusions

Blended–synchronous courses give students access to ongoing education, but technological limitations often do not allow for full access—including total social interactions and a complete audio and visual experience. Colleges and universities can promote forms of online learning, but they must go beyond simply delivering the content. Given that students believe participating in class is an attribute of being a good student, and knowing that VN students struggle to participate actively, educators have a mandate to develop systems to increase participation and social interaction in blended–synchronous courses. Additionally, as colleges and universities continue to rely on and promote hyflex and other forms of blended–synchronous learning, the need to address access and develop content that increases student participation will be a priority.

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Erika Beseler Thompson Ph.D., is the director of the Academic Support Center at Minnesota State University Moorhead. Dr. Beseler Thompson has taught for several years in blended instruction (hybrid/hyflex) classes and has researched effective instructional strategies for hybrid learning. She now helps students to adapt to, and thrive in, a range of course modalities.

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