

Reducing Transactional Distance in A Hybrid-Flexible Learning Environment in Higher Education: Interaction and Engagement Despite Asynchronous Communication

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Abstract: *This study explores the implementation of an asynchronous video-based guest lecture in an undergraduate teacher education program in Switzerland. It describes how the guest lecture was delivered to foster an interactive and engaging environment for learners and to mimic two-way communication. The study applies the tenets of the Theory of Transactional Distance in examining the student-teacher interaction in a hybrid-flexible learning environment to promote quality dialogue, participation, critical reflection, and to foster a caring relationship. It describes the instructional process and the use of video splicing to mimic interaction between the students, who were physically present on campus, and the guest lecturer 'joining' them asynchronously from a university overseas. A survey and a written reflection captured students' perceptions of how close or distant they felt to the guest lecturer and how this sense of closeness or distance impacted their engagement and learning. A debriefing grounded in the pedagogy of care captured the guest lecturer's experience. All students (n = 10) expressed appreciation for the opportunity to be part of a video-based interactive lecture. They were grateful that the guest lecturer had taken the time to interact with them, listen to their questions, and to respond to their specific questions. All respondents enjoyed the innovative approach approximating interaction in an asynchronous setting. Ways to minimize transactional distance between the geographically distant guest lecturer and the students are discussed along with strategies to increase responsiveness to students' individual questions and to demonstrate care for their learning. This article may be of interest to educators who strive to increase engagement and interaction in online or hybrid learning environments and are looking for ways to decrease the distance between themselves and their students. The study contributes to a better understanding of the use of video-based teaching approaches in hybrid education.*

Keywords: transactional distance, asynchronous, video-based, student-teacher interaction, care

Introduction

So they get to be on the screen, not just myself. (guest lecturer)

Despite their popularity, using pre-recorded videos in distance education can increase the distance between teacher and student (Moore, 2013). According to Dockter (2016),

the inclusion of pre-recorded videos is a highly structured element to include, and there is no opportunity for dialogue, in the moment. Certainly, dialogue could occur in response to the video, but that conversation then happens at a distance, perhaps days after the video had been recorded and posted, increasing distance between teacher and student. (p. 78)

Transactional distance (TD) represents the barriers to students' engagement with their learning experience. Online teachers may inadvertently create such barriers between themselves and their students (Dockter, 2016). Such barriers "arise due to the interaction between students and the teacher, other students, the subject matter content, and instructional technology being used" (Swart & MacLeod, 2021, p. 1). TD is an important concept that affects student engagement in online contexts and has been found to be a reliable indicator of student participation (Bolliger & Halupa, 2018). Increased TD between students and teachers due to their geographic separation may result in learners experiencing cognitive and emotional separation (Moore, 1997), thus affecting learning. Instructors should purposefully design activities that call for student-teacher collaboration when working with students in fully online or hybrid environments (Woldeab et al., 2020).

In the spring of 2023, a guest lecturer based from overseas, was invited to host two morning sessions at a teacher university in Switzerland. Due to the time difference of nine hours, a live lecture was impractical. The initial idea of showing a pre-recorded lecture in the traditional sense was abandoned because its options to create dialogue, which was essential for student engagement, would be limited. Instead, an asynchronous video-based approach was designed in a way that attempted to mimic live student-guest lecturer interaction while reducing TD between the students and the lecturer. However, the research on the use of video on the perceived distance between students and teachers, or guest lecturers, is limited. Therefore, the instructional design of the asynchronous video-based approach builds on the literature on TD, engagement, feedback, dialogue, interaction, and care.

Literature Review

Theory of Transactional Distance

The theory of TD was developed by Moore (1983, 1991) and used as a framework to examine interactions in online education contexts (Zhang, 2003). Rather than focusing on the physical distance of online learning, the theory emphasizes the perception of psychological and communication distance between students and teachers and mainly views distance as a social and communications gap, potentially creating misunderstandings (Moore, 1997). Three key variables have been found to affect TD, namely, dialogue, structure, and autonomy (Moore, 2013), where

“dialogue represents the communication between student and teacher; structure represents the flexibility of learning to accommodate individual needs; and autonomy represents the degree of personalization existing in the learning process” (Paul et al., 2022, p. 78). TD can be understood as a continuum from high to low. For example, high dialogue and low structure reduce TD, whereas high structure and low dialogue increase the distance between the teacher and the learner (Swart et al., 2021) and determine the amount of a student’s responsibility and self-directedness (Sevnarayan, 2022). Feelings of interpersonal closeness, sharedness, and perceived learning reflect greater teaching presence and positively contribute to low TD (Huang et al., 2016).

Scale of Transactional Distance

Paul et al.’s (2015) Revised Scale of Transactional Distance (RSTD) with 12 items is a streamlined version of Zhang’s (2003) original 31-item TD scale. The revised instrument has greater statistical validity and reliability than the original scale. The chief concepts include the distance between student and teacher (TDST), student and student (TDSS), student and content (TDSC), and student and technology (TDSTECH). Another chief concept is satisfaction. Satisfaction is one of three outcomes from the original scale (Zhang, 2003), with progress and learning being the second and third outcome, respectively. The outcome ‘satisfaction’ has been retained in all revised versions of the scale. The sub-construct TDST has been shown to “make the greatest positive significant contribution to explaining the satisfaction variance” (Paul et al., 2015, p. 373). Table 1 provides an overview of how the original scale by Zhang (2003), grounded in Moore’s theory of TD (1991), has been adapted and extended.

Table 1

Adaptations and Extensions of TDS (Zhang, 2003)

Properties	Zhang (2003)	Paul et al. (2015)	Weidlich & Bastian (2018)	Paul et al. (2022)
Name of the scale	Scale of Transactional Distance	Revised Scale of Transactional Distance	Transactional Distance between Student and Technology	Scale of Relative Proximity of Transactional Distance
Abbreviation	TDS	RSTD	TDSTECH	SRPTD
Elements	31	12	29	20
TDST	✓	✓	✓	✓
TDSS	✓	✓	✓	✓
TDSC	✓	✓	✓	✓
TDSTECH	✓	-	Extended version	Extended version
Satisfaction	Single element	Single element	Six-item scale (SatWL)	Six-item scale (SatWL)

Paul et al.’s (2022) Scale of Relative Proximity of Transactional Distance (SRPTD) adapts and extends previous work (Moore, 1991; Paul et al., 2015; Swart et al., 2014; Weidlich & Bastian, 2017, 2018; Zhang, 2003) and is developed to provide specificity to Moore’s (1993)

theory of transactional distance. Swart et al.'s (2014) Scale of Relative Proximity is applied to Weidlich and Baestian's (2018) extension of Paul et al.'s (2015) RSTD. The Scale of Relative Proximities by Swart et al. (2014) measures the difference between the actual and ideal values of TD. Each question is asked twice, first to reflect the current learning environment and second to reflect an ideal learning environment, which can measure "how far we have room to improve" (Paul et al., 2022, p. 79). Paul et al.'s (2022) SRPTD is the first valid and reliable scale to measure relative proximity of TD. It allows determining whether changes to the learning environment are moving closer to ideal learning environment.

Impact of Video on Engagement and TD

The research on the use of video on TD and engagement is limited. There are few studies related to students' perceptions of video discussions as most discussions in online environments settings are text-based and do not integrate video (Kormos et al., 2023). Serembus and Murphy (2020) reported on asynchronous video-based discussions and their benefits to minimize TD and foster connections among online students. Lohmann and Boothe (2022) described the use of asynchronous video-based discussions to increase student engagement, provide opportunities to see one another, and increase student-teacher interaction. Video adds a personal touch, fosters a sense of instructor engagement, care, and availability, thus helps to reduce TD (Wilson & Opperwall, 2023). Clarifying expectations, such as providing explicit step-by-step instructions, specifying video length and format, and sharing assessment rubrics are ways to foster engagement and reduce TD (Lohmann & Boothe, 2022).

Reducing TD

Teachers can shorten TDST by demonstrating accessibility, offering assistance, and providing timely feedback on students' academic progress. Systematic and substantial formative feedback has been shown to engender high levels of dialogic feedback, which is essential for building relationships and active engagement (Espasa et al., 2018). To form a student-teacher connection and decrease the distance between them, Dockter (2016) offered several recommendations to teachers, namely, foster regular and informal communication, individualize student-teacher dialogues, increase possibilities for students to make meaning, share yourself with your students, and decrease relational distance (Erskine, 2012).

To decrease TDSC, instructors should aim for tasks that help students create new and more complex understanding, evaluate and assess data, and make theoretical concepts applicable to real-world contexts (Paul et al., 2015). To reduce TDSS, learners should engage with other learners during synchronous meetings affording opportunities to share ideas, peer feedback, and explore diverging points of view. Giving students timely feedback on their performance is another crucial tactic for reducing TD (Paul et al., 2015). Balancing the sense of friendly familiarity with academic professionalism is critical to establishing credibility and respect (Wilson & Opperwall, 2023).

Interaction

Letting personality shine through helps make online interactions more authentic, which, in

turn, increases students' appreciation for these interactions and reduces psychological distancing (Wilson & Opperswall, 2023). Having a sense of who the teacher is can help students succeed (Dockter, 2016). In a study by Chen (2023), the three interaction types TDST, TDSS, and TDSC positively predicted college students' learning engagement in online learning, revealing the mediating effects of autonomous motivation and social presence. The scale used to measure students' perceptions of interaction was the Online Education Student Interaction Scale (Kuo et al., 2017). Student-teacher interaction in online learning environments helps develop students' interest in the course and increases their motivation to learn (Chen, 2023).

The belief that student-faculty interaction is inferior in online contexts compared to face-to-face settings, thus limiting student engagement, is challenged by Woldeab et al. (2020). Their meta-analysis indicated that online learners preferred question-based contact with tutors over peer interaction, thus suggesting the need for intentionally designed opportunities for interaction. Another chief concept critical to reducing TD is care.

Care

The notion of 'care' in blended, hybrid, and online courses manifests itself in different ways. Challenging students to learn, building personal connections with them, demonstrating support and understanding, and engendering a sense of comfort help engender a caring relationship (Rider, 2019). Addressing students by name, maintaining a warm and enthusiastic tone, and extending invitations (e.g., open-door policy) are examples of the six tenets recommended in the context of computer-mediated discourse (Rider, 2019). Rider (2019) highlighted several qualities perceived by students as caring within an online student-teacher dialogue, clustered into three themes, namely, invitation, intentionality (i.e., challenge to learn, attention to quality), and inclusiveness. A caring approach emphasizes dialogue, listening to students, responsiveness to individual values, valuing students' input, fostering relationship, involving students, inviting them to risk their ideas and questions, sharing the space with students as equal members of the learning process, and providing timely and constructive developmental feedback (Apple & Beane, 2007; Bandura & Lyons, 2012; Noddings, 1992; Rider, 2019). Some of these strategies mirrored in the instructional processes that Moore (1997) recommended for reducing TD in online learning environments, such as giving advice or engendering knowledge creation.

Research Gap

Abuhassna and Alnawajha (2023) emphasized the "void in our understanding of where transactional distance theory is headed, how far it has come, and where we need to go next" (p. 9). Although research has shown that good interaction in online courses has the potential to create a supportive learning environment, thus promoting students' engagement in learning tasks (Chen, 2023), the impact of asynchronous video-based input on student-teacher interaction and learner engagement is unclear. While there is ample research about TD and its interaction types in fully online learning environments, the research on TD in hybrid environments is only just starting to grow. There also appears to be a lack of research describing undergraduate students' perceptions of faculty's skills in creating a caring, responsive, and relevant learning environment using an interactive video-based approach across the physical-virtual space. According to Abuhassna and Alnawajha (2023), a lack of studies looked at how transactional distance theory (TDT) aligns

with other frameworks, such as instructional design models. One of their recommendations was that instructional designers should apply TDT to evaluate mobile learning studies. Similarly, more research is required to explore how TD oscillates in different hybrid environments, such as trimodal hybrid-flexible (HyFlex) or bimodal flexible (ByFlex) course models with combinations of synchronous, asynchronous, or bichronous participation modes (Beatty, 2007, 2019; Shields, 2023). Each individual hybrid environment needs an adaptation of instructional design strategies to make the learning experience more personal and interactive while minimizing TD. Finally, few studies have addressed students' and instructors' perceptions of video discussions (Kormos et al., 2023). Thus, the present study aims to address these gaps by experimenting with an interactive video-based approach in a HyFlex setting. The insights will contribute to a better understanding of the use of video-based teaching in hybrid education and its relation to TD.

Purpose

Based on these considerations, two research questions frame the study:

1. What is the impact of asynchronous video-based guest lecturer input on students' engagement, interaction, and learning?
2. What is the impact of asynchronous, interactive video input on the transactional distance between students and a guest lecturer?

Research Design and Methods

This exploratory case study investigates the impact of asynchronous video-based guest lecturer input on a small sample ($n = 10$) of undergraduate students' experiences. Data emerged from a student survey and students' written reflections both emphasizing the concept of TD (Moore, 1991) and a video debriefing with the guest lecturer grounded in the notion of care (Bandura & Lyons, 2012; Noddings, 1992). The procedures were informed by previous research on asynchronous video discussion (Lohmann & Boothe, 2022), student-tutor facilitated interaction (Wilson & Opperwall, 2023), and students' perceptions of TD in online environments (Bolliger & Halupa, 2018).

Setting

One of the authors taught a course on classroom action research methodology at the undergraduate level. The instructor was physically present in the classroom. The 12-week course was offered as a hybrid-flexible class where students could flexibly choose to attend class on campus or synchronously via Cisco Webex™ Room55 (Cisco, 2021), with a third option of asynchronous participation in two out of 12 class sessions. The instructional design of this course was informed by Beatty's (2019) HyFlex model. Classes were held in a mid-sized room seating up to 25 students. The class initially consisted of eleven undergraduate students, with one student dropping out in week four ($n = 10$, 50% female, 50% male).

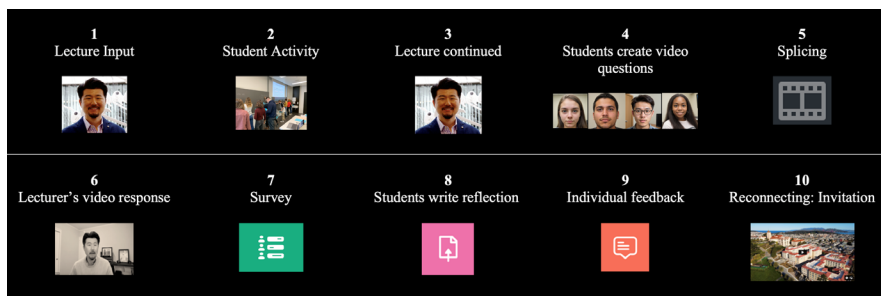
Procedures

The guest lecturer, based in the U.S., recorded a video input (26:02 minutes/3,516 words) about classroom action research methodology, classroom management, and problem behavior. The video was staged in the guest lecturer's home office with photographs in the background, which added a personal touch (Wilson & Oppewall, 2023). The video was played during class in week three of the semester. The lecture started with an introduction to classroom action methodology. Fourteen minutes into the video, the guest lecturer gave instructions for a hands-on task to keep students engaged. The instructor stopped the video to give students time to familiarize themselves with a functional assessment matrix of different types of problem behavior. While watching an excerpt from the documentary 'Educating Peter' (Wurzburg, 1992), students individually completed an observation tally by counting and categorizing instances of disruptive behavior, comparing their observations in small groups and discussing them briefly with their regular on-site instructor. The students then continued to watch the video in which the guest lecturer discussed some of the problem behaviors displayed in the documentary, which allowed students to check their own observations against the guest lecturer's comments. He presented different theoretical concepts from classroom action research and made them applicable to real-world teaching contexts (Paul et al., 2015).

At the end of the lecture, the guest lecturer explained the main task, which was designed to engender active engagement with the lecture content, to foster interaction among students and, most importantly, create interaction between the students and the guest lecturer. Students were asked to record a video-response to the guest lecturer. The rationale to reduce TD by creating dialogue across spaces (i.e., synchronous versus asynchronous, physical versus virtual), sharing the space on screen with students, and creating a space to listen and respond to students' questions and concerns (Apple & Beane, 2007; Bandura & Lyons, 2012; Dockter, 2016; Noddings, 1992; Rider, 2019). Each student had to ask three questions (e.g., confirmation, clarifying, or challenging question). The time limit was set at two to three minutes per individual student and up to five minutes per group. Explicit step-by-step instructions and requirements were communicated to foster engagement and reduce TD (Lohmann & Boothe, 2022). Additionally, if they wanted the guest lecturer's advice on a problem experienced during their internship as a teacher trainee in an elementary school, they were invited to describe the problem or their ideas. This element was built purposefully to encourage students to risk their ideas (Apple & Beane, 2007; Bandura & Lyons, 2012; Noddings, 1992; Rider, 2019). Students paired up and recorded each other. This task was completed within 40 minutes. The steps are summarized in Figure 1.

Figure 1

Overview of Procedures



Splicing Video Clips Together

A total of four groups and three individual students produced seven videos and 33 questions. The students uploaded their videos to the cohort's private channel on *SwitchDrive* (Switch, 2024), an academic video sharing platform. The total duration of the seven videos was 17 minutes, ranging from 1:18 minutes to 3:39 minutes. The video transcripts showed a total word count of 2,130 words. The guest lecturer watched the videos and selected one question from each student. For example, one student asked, "While focusing on the students who have a more problematic behavior, how do I not forget about the students who are actually well-behaving? Because I don't want to give all my attention to that one student who's making problems." Another student asked:

The second question would be that we talked about the extent of the influence of a kid with problem behavior in a classroom with other kids who do not exhibit problem behavior. Do you think there could also be a positive influence? Because in the video with Peter, we saw that they generally did not react as badly to him as we would have expected. They seemed pretty helpful and protective of one another. What do you think is the range or what is usually the reaction of other kids?

After selecting the questions, the guest lecturer embedded their questions into iMovie and inserted his answer immediately after their question. The splicing was not only done to approximate live student-tutor interaction, but also to provide substantive and focused answers that would help the students to make informed decisions in their own classrooms. The guest lecturer's answers were specifically geared towards each individual student's question. For example, if a student described a problematic behavior from their own elementary school and asked for advice, the guest lecturer would provide specific ideas on how to address the problem and share examples from his own teaching. Figure 2 provides an idea of the composition of the video response (36:29 minutes/4,427 words) played during week four.

Figure 2

Guest Lecturer's Video Response with Students' Video Questions Embedded



Data Collection

Data were collected through a student survey, a reflective writing task, and a video debriefing with the guest lecturer. The qualitative data contributed to answering the first research question on the impact of the asynchronous video-based guest lecturer input on students' engagement, interaction, and learning. The quantitative data helped answer the second research question on the impact of the video-approach on TDST. Table 2 provides an overview of the components created for and during the video-based approach.

Table 2

Overview of Components

Role	Component	Video duration	Word count
Guest lecturer	Video input	26:02	3,516
Students	Video questions	17:00	2,130
Guest lecturer	Video response	36:29	4,427
Students	Written reflection*	-	5,512
Students	Survey comments*	-	424
Guest lecturer	Debriefing*	05:57	760
Total	-	85:28	16'769

Note. *Subject to data analysis

Survey. The survey revolved around the concept of TDST and captured students' perceptions of (a) how close or distant they felt to the guest lecturer and (b) how this sense of closeness or distance impacted their engagement and learning. The five-item survey was adapted from RSTD (Paul et al., 2015). To measure the sub-construct of student-teacher interaction, the first three survey items were adapted from TDST (Paul et al., 2015; Zhang, 2003), which captured the distance or closeness between the students and the teacher: (1) *"The guest lecturer paid attention to my questions,"* (2) *"I received feedback from the guest lecturer about my questions on behavior management and/or classroom action research,"* and (3) *"The guest lecturer is helpful to me."* The fourth survey item, *"The guest lecturer seems to care about my learning"* was based on the notion of care (Rider, 2019) and its relevance to TD. The fifth survey item, *"The guest lecturer values my ideas and opinions"* was modified from TDSS (Paul et al., 2015; Zhang, 2003). Each item offered five response choices, namely, *strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.* The survey concluded with an open-ended item in which students were asked to describe in three to five sentences how they experienced the asynchronous video-based interaction. The survey was administered via the university's learning management system (LMS) during class in week four. Students were informed that the participation was optional and anonymous and that their responses would be used for research to help improve teaching in an asynchronous setting. Eight out of ten (80%) students chose to complete the survey. One student participated synchronously via Cisco Webex™ Room55 (Cisco, 2021) during this session. One student was absent.

Written reflection. Three reflective prompts were drafted in alignment with the goals of the guest lecture. A mandatory assignment was created in the LMS, along with three assessment descriptors to clarify expectations, as recommended by Lohmann and Boothe (2022). Output options included a written or an audio response. All participating students opted for the written response. The reflective prompts were: (a) Which aspects of the guest lecturer's video response did you find most interesting and why? (b) To which extent did the guest lecturer's video input help you to decide on your own classroom action research project (or help you to refine your ideas)? and (c) Which of the guest lecturer's examples did you find most relevant to your own teaching context?

Expectations as to the content and quality were incorporated in the task description as follows: Your reflection (a) provides a clear and compelling description of those aspects in

the guest lecturer's asynchronous video response that you find most interesting, (b) explains specifically how the guest lecturer's video input has informed the problem (or issue) of the classroom action research project that you are thinking of conducting yourself, and (c) effectively ties the examples (provided in the guest lecturer's video responses) to your own teaching context.

Students were told that their responses were going to be shared and discussed with the guest lecturer and that their instructor would respond to them individually in writing within a week. By week five, the written reflections had been responded to. In a message relayed by the instructor, the guest lecturer thanked the students for their work and invited them to lunch on the university campus if they ever happened to be in the area and wished to reconnect with him.

Debriefing. In November 2023, seven months after the video-based interactive project, the debriefing provided a glimpse of the guest lecturer's insights. Seven questions (see Table 3) grounded in the pedagogy of care (Bandura & Lyons, 2012; Noddings, 1992) were sent to him by email, which he answered by video (5:57 minutes).

Table 3

Debriefing Questions

Concept	Questions
Asynchronous interaction & dialogue	In the context of an asynchronous setting, how effective was the video-based interactive approach in terms of (a) creating interaction between you and the students, (b) having a dialogue with the students, (c) promoting active student engagement, and (d) prompting reflection?
Valuing students' ideas	How did this asynchronous video-based approach help to create a space that values the ideas of students (and considers them equal members of the teaching and learning process)?
Distance	After viewing the students' questions and responding to them, how close or distant did you feel to the students?
Care	What are strategies for asynchronous guest lecturers to demonstrate care for students' learning?
Responsiveness	Is there anything else we could have done to increase responsiveness to students' individual questions?
Relationship	How well did the set-up with our asynchronous video-based interaction help to establish a personal connection?
Take-aways	The students shared a lot of valuable take-aways, as evidenced in their survey responses and their written reflection. What are your take-aways?

Data Analysis

An inductive/deductive hybrid thematic analysis (Proudfoot, 2023) was conducted to analyze 102 segments emerging from ten students' written reflections (58 segments/5,512 words), the open-ended comments in the student survey (28 segments/424 words), and the debriefing with the guest lecturer (16 segments/760 words). To support a deductive approach, an initial coding scheme was drafted based on TD-relevant concepts (Apple & Beane, 2007; Bandura & Lyons, 2012; Huang et al., 2016; Moore, 1983; Noddings, 1992; Paul et al., 2015, Paul et al., 2022, Rider, 2019; Zhang, 2003), as shown in Table 4.

Table 4

Concepts Informing Deductive Data Analysis

Concept	Keywords	Research
Distance	Psychosocial distance, separation in time, space, & pace	Moore (1983, 1991, 1997); Paul et al. (2015); Paul et al. (2022); Swart et al. (2014); Swart & MacLeod (2021); Weidlich & Bastian (2017, 2018); Zhang (2003)
Student engagement & interaction	Active learning, collaboration, humanized interaction	Chen (2023); Lohmann & Boothe (2022); Woldeab et al. (2020)
Care	Acknowledge, respect, listen, support, foster relationship, appreciate	Bandura & Lyons (2012); Noddings (1992); Wilson & Opperwall (2023)
Availability, support, & understanding	Approachable, accessible, receptive	Wilson & Opperwall (2023)
Timely developmental feedback	Coaching, evaluating, constructing	Apple & Beane (2007); Bandura & Lyons (2012); Moore (1997); Noddings (1992); Paul et al. (2015); Rider (2019)
Knowledge creation	(Co-)construction of learning, dialogue	Moore (1997)
Authenticity	Meaningful learning, relevance, real-life	Wilson & Opperwall (2023)
Friendliness & professionalism	Instructor commitment to students' learning	Wilson & Opperwall (2023)
Valuing students' input	Acknowledging and building on students' input	Moore (1991); Paul et al. (2015); Zheng (2003)
Sharing the space as equal members of the learning process; involving students; inviting students to risk their idea	Equal contributions, mutuality, reciprocity, trust	Apple & Beane (2007); Bandura & Lyons (2012); Dockter (2016); Huang et al. (2016); Moore (1997); Noddings (1992); Rider (2019)
Interpersonal closeness	Student-teacher relationship, low distance	Huang et al. (2016)
Perceived learning	Self-assessment, reflection on learning	Huang et al. (2016)

In parallel, an inductive approach helped to discover new codes and themes. After familiarizing the data, the first author assigned codes to each of the 102 segments, identified themes, and reviewed and named themes (Creswell, 2013; Merriam & Tisdell, 2016). Taking an iterative and reflexive approach, both authors examined and discussed the data multiple times. The coding was done in MaxQDA (2020) to produce frequencies by theme. The quantitative data emerged from the single-response survey items. Frequencies were calculated for each response choice. The survey was completed by eight students. Statistical analyses were not conducted because they would not have yielded meaningful results due to the small sample size and the limited number of survey items.

Validity

Strategies to support validity include the triangulation of methods (i.e., survey, written reflection, debriefing), the triangulation of investigators in the data collection process, and the triangulation of source (i.e., students, guest lecturer, researcher) (Merriam & Tisdell, 2016). The short duration of the video-based approach, the small sample size, and the use of a modified subscale clearly represent limitations. As a qualitative researcher is often the primary instrument of data collection and analysis, researcher reflexivity is crucial (Merriam & Tisdell, 2016). Because the second author assumed the role of the guest lecturer, continuous reflection on his role and the research relationship was critical. To provide a platform for researcher reflexivity and to help support the qualitative researcher's integrity, the first and the second author had frequent debriefings prior to, during and after the video-based approach to review and discuss the students' input and questions. A debriefing interview was conducted to prompt critical reflection (Lincoln & Guba, 2000; Merriam & Tisdell, 2016).

Results

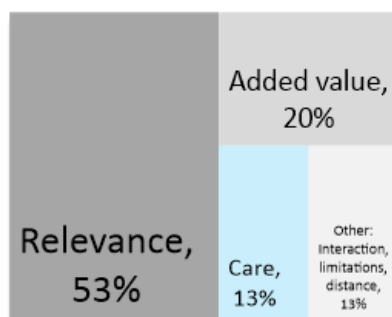
The results describe the impact of the video-based approach on students' engagement, interaction, and learning, how the approach created opportunities for reciprocity, dialogue, and interaction as well as its impact on TD between the students and the guest lecturer.

Engagement, Interaction, and Learning

The identified codes were assigned to three key themes, namely, relevance, added value, and care. Students' comments indicated clearly that the video-based interaction was perceived as an added value, which was appreciated on different levels. In particular, there was a high level of interest in the guest lecturer's expertise and real-life examples from his experience as a special education teacher. This experience provided a strong relevance of his input to the students' current needs as teacher candidates. Occurred was an increased sense of being heard and responded to, an awareness of reciprocity and dialogue mediated through video, and evidence of critical reflection prompted by both the guest lecturer's initial video input and his subsequent video response as a reaction to students' video questions. Figure 3 captures the key themes.

Figure 3

Key Themes



The three key themes and the ten codes, which account for 88 coded segments (86% of 102 coded segments), are shown in Table 5, along with the code frequencies and representative statements for each code. The representative statements were written in English, which was a foreign language for the students. Mistakes were not edited. The minor codes, which are not shown in the table, account for 12% of the 102 coded segments and encompass interaction (7), limitations (4), and distance (3).

Table 5

Overview of Themes

Theme	Code	Frequency (88)	Representative statements
Theme 1: Relevance (54)	Relevant	23	I think he gave some good examples that were also relevant in the classroom I work in. It made me recognize some issues I have in my classroom that I would like to address.
	Helpful & interesting	31	He gave me a very helpful response. You also really helped me think of my project more in a statistical way. All of his responses were incredibly interesting, which makes it hard to pick. I find the subject fascinating and was grateful for his input. I found it really interesting to hear from your case, where you tried different approaches which didn't work and then got in contact with the kid's grandmother.
Theme 2: Added value (20)	Prompts critical reflection	2	I found it helpful to do video responses because that way I was able to think about my questions. We tend to lecture and we seldom allow students to sit on the topics. Really think about what was being said or talked about, and then creating their own question and being able to express it by recording using their phone.*
	Sharing expertise	4	His accumulated experience of working with children with problem behavior or neurodivergence really shows; that is the field I want to eventually work in, so they helped a lot with that.
	Learning community	4	I really liked that we could see all questions and answers, so I think I learned a lot about the questions from the others as well. I thought that's a really good way for us to show that any thoughts or questions that they may have is good for the learning community.*
	Enjoying reciprocity	7	I really liked this kind of exchange. It was good to kind of see them doing similar to what I have created.*
	Innovative	3	It was an unusual and encouraging approach.

Theme 3: Care (14)	Committed	4	He seemed very interested in answering our questions and really cared for us, which, in return, made me being very interested in what he said. I think one thing I thought about really focusing on was showing that I care about their questions and by doing that, by thinking that, I decided to embed their questions into the iMovie as I was creating the answer video.*
	Responsive	3	He really took his time and answered all our questions. I wish I was able to answer more questions. They asked two or three questions and I only chose one from each group. Some were repetitive, so I decided to combine. But if I'd had more time, I would have answered all the questions and that would have maybe felt like the students were getting more responses from me.*
	Individual specific responses	5	I think it really helps me to know that someone will listen / take a look at my output and tries to help me with my questions and stuff, especially when they actually take time to answer your specific questions.
	Valuing students' input	2	Moreover, he had a very entertaining, involving and appreciating way to answer our questions.

Note. *Guest lecturer

Reciprocity, Dialogue, and Interaction

All respondents expressed appreciation for the opportunity to be part of a video-based interactive lecture. They were grateful that the guest lecturer had taken the time to interact with them, to listen to their questions, and respond to their specific questions. All respondents found the experience extremely valuable and acknowledged the innovative approach to mimicking and recreating interaction in an asynchronous setting. As one student commented, "I think I have learned a lot and the way it was organized really caught my attention and focus." They were grateful that the guest lecture was made possible despite the 9-hour time difference.

Embedding students' questions into the guest lecturer's 36-minute video response and watching the video during class was much appreciated. It served as a reminder of what they had asked in the previous week, and they were eager to see what their peers had asked and learn from the responses they got. One student mentioned:

I enjoyed the work with the video-based interaction. First of all, it was an unusual and encouraging work mode. I think it really helps me to know that someone will listen and take a look at my output and tries to help me with my questions. Moreover, the guest lecturer had a very entertaining, involving and also appreciating way to answer our questions. I can imagine that this was quite a lot of work...Thanks.

Similarly, the guest lecturer's perceptions highlight the notion of reciprocity, dialogue, and interaction.

A student explained this experience:

I think if I'd just recorded a video and sent it to the instructor, I think it would have been just one way. Just record it, send it and not even think about it. But I think having to go back and forth, listening to the students, answering their questions and sending them back and seeing their survey, it felt as though there was a little bit of interaction going on, more so than just a one-way asynchronous instruction.

Co-creating the learning space with the students as equal members of the learning process was critical. The guest lecturer purposefully chose video splicing to share the learning space with the students as equal members of the learning community, which was captured in the following statement, "So they get to be on the screen, not just myself."

Reducing TD in an Asynchronous Setting

The students' perceptions indicated that the distance between them and the guest lecturer was reduced. All eight students who completed the survey either chose *strongly agree* or *agree* across all five survey items. The response options *neither agree nor disagree*, *disagree*, or *strongly disagree* were never selected. Table 6 shows the answers to the survey items, selected and modified from the TD scale (Paul et al., 2015; Zhang, 2003).

Table 6

Survey Responses

#	Survey item	Strongly agree	Agree
1	The guest lecturer paid attention to my questions.	5 (63%)	3 (27%)
2	I received feedback from the guest lecturer about my questions on behavior management and/or classroom action research.	6 (75%)	2 (25%)
3	The guest lecturer is helpful to me.	4 (50%)	4 (50%)
4	The guest lecturer seems to care about my learning.	7 (75%)	2 (25%)
5	The guest lecturer values my ideas and opinions.	4 (50%)	4 (50%)

A few comments indicated limitations of the asynchronous video-based format, such as being unable to ask a follow-up question or clarify a misunderstanding (e.g., misinterpretation of a student's question, possibly caused by a linguistic inaccuracy). The asynchronous setting prevented immediate clarifications, which would have been easier if it had been a live lecture. Although students understood the time constraints, several students would have preferred to have all their questions answered, rather than just one each. However, the class instructor had a list of their 33 questions and kept referring to them throughout the semester so that most of the questions were ultimately resolved by the end of the semester.

Similarly, the guest lecturer's perception indicated that the video approach helped reduce TD between the lecturer and the students.

I think seeing the videos of them really helped me to feel closer to the students because sometimes even in Zoom, the students are in a large group, and they tend to be further away from the camera. So, you don't really see their facial expressions or see them. I thought that it was really good in terms of the distance feeling a little bit shorter.

Discussion, Implications, and Limitations

The video-based approach in the present study was designed to maximize student engagement and foster student-teacher collaboration (Lohmann & Boothe, 2022; Wilson & Opperwall, 2023; Woldeab et al., 2020). The students' reports of their involvement and engagement levels indicated low TD. Despite separation by place and time, the students did not report cognitive or emotional separation (Moore, 1997). Most importantly, their accounts reflected that the exchange with the guest lecturer was relevant, provided added value, and demonstrated care (Bandura & Lyons, 2012; Noddings, 1992; Wilson & Opperwall, 2023).

To reduce TDST, the guest lecturer demonstrated accessibility to the students by inviting their questions, offering assistance in addressing issues with problem behavior that they had experienced in their own classrooms, and providing feedback on their ideas for their own classroom action projects (Wilson & Opperwall, 2023). The tasks afforded students the opportunity to construct new knowledge (Moore, 1997), evaluate data, and make theoretical concepts applicable to real-world contexts (Wilson & Opperwall, 2023), which helped to decrease TDSC (Paul et al., 2015). Both the guest lecturer and the regular instructor gave students timely feedback on their output (i.e., within one week), which was instrumental to reducing TD (Lohmann & Boothe, 2022; Moore, 1997; Paul et al., 2015).

Regarding structure, which was one of the three key variables impacting TD (Moore, 2013), the video-based approach was highly structured, thereby leaving little room for flexibility of learning, which potentially increased TD (Moore, 2013). Nevertheless, the students' feedback indicated that the video-based approach was a successful endeavor to recreate an authentic student-teacher dialogue in a hybrid environment. It also fostered autonomy by allowing students to personalize their learning process in embedding their own classroom scenarios and posing specific individual questions to the guest lecturer (Moore, 2013; Paul et al., 2022).

The notion of care manifested itself in multiple ways. The video-based approach emphasized dialogue. It involved students by inviting them to risk their ideas and questions, listening to their specific concerns, acknowledging and responding to their input, providing timely and constructive developmental feedback, and sharing the space (on the screen) with them (Apple & Beane, 2007; Bandura & Lyons, 2012; Noddings, 1992; Rider, 2019).

The findings echo Lohmann and Boothe (2022) in that responding to video-based discussions can be time-consuming as the instructor needs to watch the entire video to determine if students have met the objectives or, in the case of this study, to create a video response. Another limitation caused by the asynchronous setting was that the guest lecturer misunderstood one of the questions, pointing to the notion of 'distance' as a social and communications gap (Moore, 1997) because the student did not have an opportunity to clarify.

The following strategies, among others, can increase the opportunities for students and teachers to form a connection in an asynchronous setting and decrease TD between them as one would: "share yourself with your students" (Dockter, 2016, p. 83). The recording of the guest lecturer's first and second video was done in his home office with a judo image displayed in the background. One of the students immediately recognized the image and revealed that he is a judoka himself. This shared interest helped to engender a connection by (a) using video questions and responses to create student-teacher dialogue across the virtual-physical space; (b) creating a sense of immediacy by inserting the students' video questions into the teacher's video response (i.e., video splicing); (c) de-emphasizing the teacher's presence and, instead, emphasizing

students' role by sharing the screen (or stage) with them; and (d) responding personally and individually.

Using video to share the learning space with students, to create opportunities for increased dialogue and reciprocity, and to mimic live interaction decreases the student-instructor distance in asynchronous learning spaces.

Conclusions

The study explores the impact of asynchronous video-based guest lecturer input on students' engagement, interaction, and learning. The findings indicated that the video-based approach not only fostered interaction, dialogue, engagement, and reflection but went beyond that by creating added value. Recording video input, watching students' video questions, and creating a video response afforded a way to interact and collaborate in an innovative way, which would not have been possible if the guest lecturer had just recorded a video, with students watching it, and sending emails with their questions. The asynchronous video-based approach helped create a space that values students' ideas by allowing them to express their own questions and by demonstrating that their thoughts would also be relevant to the learning community.

The study also explores the impact of asynchronous, interactive video input on the transactional distance between students and a guest lecturer. From the guest lecturer's perspective, seeing and hearing the students in their individual videos made him feel closer to the students than if he had joined the class live via videoconference. The guest lecturer demonstrated care for students' learning by taking the time to embed their questions into iMovie as he was creating the response video. Nevertheless, the video editing and splicing took a lot more time than if he had just joined a live video conference. Another limitation was that this approach did not create the sense of immediacy that a live lecture would have provided, thus increasing TD. Students were very appreciative that he considered each of their questions and provided extensive and contextualized responses to them, which in turn perceived as highly relevant to their teaching and learning context. The findings indicated that the asynchronous delivery did not increase the psychosocial distance between the students and the guest lecturer although there were some indications of a communication gap when misunderstandings occurred due to the asynchronous setting. In conclusion, this video-based approach can be recommended to foster student-teacher interaction in asynchronous courses with small cohorts of students. The video-based approach has the potential to humanize student-instructor interaction even in asynchronous or bichronous hybrid settings if it emphasizes individualized opportunities for learning and reflection.

Limitations

One of several limitations of this study was the small sample size; it being an enrollment of 10 students in this hybrid undergraduate course. A further limitation was the absence of a control group that did not have access to this asynchronous video-based guest lecture. Students' engagement and interaction levels with the guest lecturer in previous live video conferences in the years 2018 through 2021 were not captured so that systematic comparisons with the findings of this pilot-study were not possible. A further limitation was that only a few items from the TD scale (Paul et al., 2015) were used, partially capturing one dimension of TDST. A reliability analysis was not conducted because the small sample size would not have yielded meaningful

results. In addition, the findings from this pilot-study should not be extrapolated given the short duration of the asynchronous video-based interaction. The present study only offered a snapshot of two sessions' worth of interactions. A similar video-based approach should be extended to several weeks of interaction, dialogue, and feedback.

Future Research

Future research should explore the impact of an interactive video-based approach on students' engagement levels and the quality of their output by comparing TD in asynchronous and synchronous modalities. Whether today's generation of students finds it motivating to see themselves in the lecturer's response video could be another avenue for investigation. Future research on TD should apply Paul et al.'s (2022) valid and reliable SRPTD to capture students' perceptions twice to measure room for improvement. A longitudinal or experimental design could be used to further test the relationship between TD and learning engagement in hybrid learning. According to Abuhassna and Alnawajha's (2023), their recommendation was a need for time-series study design because limited understanding of TD oscillation between asynchronous and synchronous modalities existed. Finally, there is a lack of research investigating how the theory of TD fits in with other frameworks (Abuhassna & Alnawajha, 2023). Dockter (2016), for example, had drawn on relational distance theory (Erskine, 2012) to explore the formation of relationships through course design, which offered a promising avenue for further investigation of TD.

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