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Social Presence in a Virtual Drama Activity in Teacher Education

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Abstract: This paper examines how social presence (SP) was manifested in pre-service teachers' (PSTs) online virtual drama activity in AltspaceVR. As part of a course related to climate education, the PSTs worked in media teams (blog/vlog, TikTok, magazine) to create a strategy for promoting climate awareness. The data consist of screen recordings of the activities and PSTs' written reflections. We analyzed the data based on affective, cohesive and interactive dimensions of SP (Garrison et al., 1999; Whiteside, 2015), and examined how the PSTs had built their characters. The video analysis revealed many instances of SP, indicated especially by cohesive and interactive responses. Overall, the VR environment was conducive to creating a shared fictional reality, but clear instructions are needed for character building.

Introduction

Limited social interaction and presence is a major challenge in pre-service teachers' (PST) online learning (e.g., Näykki et al., in press). Learning management systems often fail to support social and collaborative knowledge construction (Kalantzis & Cope, 2020) and video conferencing can be exhausting (Bailenson, 2021). There is a need for a more holistic view of the affordances of online tools for bringing social and collaborative aspects to the forefront (Carrillo & Flores, 2020). We are interested in virtual reality (VR) as a collaborative learning environment, and in this paper, we present findings from a study examining how social presence was displayed in an online virtual drama activity with PSTs. Drama, working with fictional characters in fictional time and space, creates a frame for social interaction and learning. Can using a VR environment as the platform for drama nurture social presence for PSTs? What is lost in the virtual sphere and what is gained?

Theoretical background

We make use of the model of social presence (SP), originating from the theory of Community of Inquiry (COI; Garrison et al., 1999) that is widely used to study and develop a sense of presence in online learning. COI approaches presence through three overlapping perspectives that contribute to the learning experience: social, cognitive, and teaching presence. Social presence is often intuitive and natural in face-to-face settings, but in the context of online learning – mediated, limited, and enabled by digital tools that often increase the cognitive load of the teacher and students alike – requires conscious effort for productive learning and interaction. SP refers to being able to project oneself socially and emotionally through the medium being used; it manifests as emotional expression, open communication, and group cohesion (Garrison et al., 1999). In the CSCL context, SP is related to the meaningful use of online tools to facilitate interaction and emotional support (Hernández-Sellés et al., 2019).

Drama in teacher education warrants more research in online settings (Dyment & Downing, 2020). In our study, drama creates a frame in which PSTs invent and enact fictional reality, helping them communicate their understanding of the topic in an aesthetic way to themselves and their fellow participants (Neelands & Goode, 2016; Rasmussen 2010). At the center of drama is the use of our natural capacity to imagine ourselves differently; real-life situations and stories give us the "what if" needed for imaginative drama work to begin (Toivanen, 2016). Here, climate change provided the context, characters and problems to be resolved or understood (see Research context and methods). Drama can be used to extend the participants' worldview and deal with difficult situations in a safe environment while analyzing them together (Bowell & Heap, 2010; Colantonio et al., 2008). It has both an emotional and intellectual impact on the participants, facilitating them to explore human tensions and conflicts and to reflect on experiences, both material and virtual (Gallaher et al., 2020; Howard-Jones et al., 2008).

Virtual reality can be seen as a good fit with drama, as its experiential and immersive affordances can support the sense of community (e.g., Ripka et al., 2020). Regardless of the degree of immersion – whether the virtual world is used with a head-mounted display or as a desktop version – social presence is necessary for the joint construction of the fictional reality of the drama (Robertson & Oberlander, 2002). Overall, research on interpersonal interactions and SP in learning activities in VR is still emerging. There is a need for studies going

beyond self-reported questionnaire data, enabling triangulation, and examining what learners really do when collaborating in these environments – for example, by using screen capture videos (Osmers et al., 2021; Southgate, 2020). In this study, we examine the elements of SP using both video analysis and participants' written reflections to find out if VR can deliver social presence despite being "immaterial" and "disembodied".

Research context and methods

The context is a virtual drama activity with PSTs during remote learning in February 2022. The activity was part of an interdisciplinary course, *Environmental Storytelling,* addressing climate education through experiential methods and media education. The course was implemented by three teacher educators with the support of researchers, and 19 PSTs participated. The drama comprised one two-hour online session on a virtual island in AltspaceVR, used as a desktop version on the PSTs' own computers. Prior to the session, the PSTs had been assigned to five teams representing different media (YouTube, blog/vlog, TikTok, magazine, radio) and asked to build avatars for their characters. The teachers and researchers stepped into the role of officials from the Ministry for the Environment, aiming to facilitate the participants' move into the "as if" of drama (e.g., Cziboly & Bethlenfalvy, 2020). The Ministry asked the teams to create a strategy for promoting climate awareness in their respective audiences. The teams dispersed around the island to work on the task, and after an hour gathered back together to present their ideas. Giving participants an overarching task that moves them "into a position of influence" in relation to the problem aims to frame their engagement in a productive way (Heathcote, 2015).

In this paper, we focus on three teams (blog/vlog, TikTok, magazine). One of the five teams comprised of PSTs who did not consent to video data collection, and another was excluded from the analysis due to technical problems during the activity. The data consist of screen recordings of the drama (1 hour per team) and PSTs' written reflections (N = 9) collected immediately after the activity with open-ended questions based on the COI model. The research questions are: 1) How does SP manifest in PSTs' small-group interactions during a role-based drama activity in a VR environment? 2) How do the PSTs convey their identities through their role characters? 3) How do they perceive SP when working as avatars in the virtual drama? In the analysis, we looked for the elements of SP: emotional expression, group cohesion, and open communication (Garrison et al., 1999). In the coding scheme (Whiteside, 2015) they were labeled as *affective*, *cohesive*, and *interactive* responses, respectively. Videos were analyzed by two researchers who coded 30-second segments according to whether they included indicators of the SP elements (RQ1). Inter-rater reliability (Cohen's kappa) was calculated for each code: the values were between 0.77 and 1.0. In the written reflections, we identified quotations where the PSTs addressed building their characters (RQ2) or aspects related to the SP elements in the drama activity (RQ3).

Results

Table 1 presents the results of the video analysis (RQ1). Interactive responses appeared in 361 segments, most of them agreement or invitation. Cohesion emerged in 256 segments; nearly half of them were references to the group as "us". Affective responses, comprising laughter and humor, occurred 84 times. As our context was drama, we were also interested in how being in a role was reflected in the SP elements. Within the cohesive category, we observed in-character sharing as well as vocatives addressing others both with real and character names. However, it was not always possible to discern if someone spoke in or out of character in task-oriented interaction.

Table 1
Elements of Social Presence Identified in the Screen Recordings

Element	Indicator	*F*	Example
Interactive (*F* = 361)	Agreement / Accepting idea	160	Earlier we talked about . . . making some small
	Invitation	132	changes but how could we, like, get the readers to
	Reference to earlier ideas	50	*really* change [their habits]? If we've been . . .
	Constructive disagreement	19	learning to recycle for twenty years, we should kind of be there already.
Cohesive (*F* = 256)	Group reference ("we")	121	I just got a ten-euro sub [on Twitch] requesting a
	Vocative (character name)	44	shoutout to Ville Paasikivi. Thanks, Ville, for the
	Social sharing (fictional life)	42	tenner! I mean, thanks, Ville, for subbing! Can't
	Reference to task (progress)	26	say tenner 'cause [they'd think I] only want
	Vocative (real name)	23	money. I just want subscribers!
Affective (*F* = 84)	Laughter	49	– Hi, I came here [by the campfire] to warm
	Humor	35	myself up. – [laughs] Okay...

The second question (RQ2) aimed to find out how the PSTs experienced the functioning of drama and how they built their characters. The PSTs, apart from two, described avatar-creation as a meaningful and inspiring work phase and reported approaching it from two perspectives: some built isomorphic characters that looked like their real selves, and for others it offered an opportunity to take a discordant role, that is, to be someone else (cf., Toivanen, 2002). Both approaches offer a different perspective on the imaginary reality and its events. One PST described: *"I built a character that in some ways resembled me and in some ways depicted the character I would like to be."* External reflection of the process (Östern et al., 2017) was represented by the written reflections where the PSTs described the drama as a meaningful experience, both as participants and future teachers.

The third question (RQ3) focused on the PSTs' perceptions of SP during the activity. Pertaining to cohesion, their written reflections revealed aspects related to avatars or characters. These concerned, firstly, nonverbal communication: limited gestures and lack of facial expressions made interaction more rigid (11 quotations by five PSTs). Secondly, some dissonance arose from interacting with familiar coursemates in fictional roles (seven quotations by five PSTs), but it led to amusing moments as well: *"Many . . . had created characters that were recognizable by appearance, which was also fun."* In terms of more task-focused interaction, the PSTs reflected on the relevance of virtual drama for the learning aims (12 quotations by eight PSTs), such as the pedagogical value of adopting a role: *"Drama activities help you step into a role, and then you are the expert . . . In a role, you must also actively think about how and why the character acts in a certain way."* Most references to the affective element were related to hilarity or excitement (eight quotations by six PSTs) but in total, a range of different emotions – such as confusion, belonging, frustration, and feeling relaxed – appeared in the reflections.

Discussion

The PSTs' discussions were active, and the video analysis revealed many instances of SP, indicated especially by cohesive and interactive responses. Affective responses emerged less often, possibly due to limited nonverbal communication, making it more difficult both for the participants to express and for the coders to detect emotions. In the desktop version of AltspaceVR, the PSTs' characters had no facial expressions or hand and body gestures, so they communicated through talk, emoticons, and some spatial orientation and proxemics. As found also by Ripka et al. (2020), missing social and behavioral cues makes interaction more challenging in VR, limiting the work to take place only at the level of speech. However, in contrast to video conferencing – where there is no sense of physical proximity or relative spatial arrangement (van Vuuren & Freisleben, 2020) – everyone shared the same virtual environment, being able to move and act with others. As the PSTs experienced and controlled the action through the avatar, they were physically close to each other in the same three-dimensional space.

Overall, the results suggest that the VR environment was conducive to adopting a role and creating a shared fictional reality. Roles can offer opportunities for examining new perspectives in a safe environment, facilitate action in a new space, and support the expression of thoughts and feelings (Junus et al., 2022; Toivanen, 2016). The PSTs' approach to character creation was twofold: some chose to present their real selves while others took the opportunity to be someone else, but according to Toivanen (2002) this bears no relevance to acting in a role or experiencing it as meaningful. However, to ensure the consistency of the experience, it might be useful to instruct the PSTs to aim for a similar degree of fictionality when creating their characters.

Roles added another layer to the interpretation of SP (i.e., projecting oneself socially and emotionally via the medium; Garrison et al., 1999). For example, characters sharing anecdotes about their imaginary lives suggested that the PSTs made an effort to build cohesion in the fictional reality. Related to the SP coding scheme in general, Whiteside (2015) has called for more consistency: for example, social sharing could be seen both as cohesive and affective. This is also true for our data, potentially affecting the relative sizes of the categories. Furthermore, we found that the framework would need some adaptation to be more consistent when used for different types of data (in our case, video recordings and written reflections) and to facilitate triangulation between the participants' and external coders' interpretations. We will expand this study by examining SP in a new, more immersive implementation of the virtual drama activity using head-mounted displays.

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