

Teacher Perspectives on Social Virtual Reality for Remote School Participation: An Exploratory Study

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Abstract

Students experiencing emotionally based school non-attendance often lose not only instructional access but also regular social contact with school. This extended abstract reports an exploratory teacher study of a social virtual reality classroom for remote school participation. Three teachers tested the prototype and joined a facilitated focus group. Reflexive thematic analysis identified three design requirements: low-pressure participation, embodied social presence, and strong teacher orchestration within hybrid workflows. Teachers also noted possible relevance for later re-engagement with school routines, but that remains a hypothesis for future work.

1. Introduction

Emotionally based school non-attendance is associated with anxiety, contextual pressures, and diverse learning needs, and often leads to a progressive loss of contact with both teaching and peer relationships (Leduc et al. 2024). In this paper, we use the term emotionally based school non-attendance to foreground participation difficulty rather than intentional refusal. For these students, the practical problem is rarely access to curriculum alone. It is participation: joining class, feeling able to remain there, and reconnecting with teachers and peers without immediately facing the full demands of physical attendance.

Conventional remote learning tools preserve access to instruction, but they often reduce classroom interaction to a narrow set of visual and verbal cues. Prior work on telepresence and immersive education suggests that richer forms of mediated presence may support connection, but also introduce new demands around orchestration, usability, and teacher workload (Fletcher et al. 2023, Di Natale et al. 2020, Glawogger et al. 2025). Social virtual reality is relevant here because embodied avatars, spatial audio, and shared manipulable objects can create a stronger sense of being together in the same learning space (Riva et al. 2019, Hutson 2022).

The present work examines *ReEngage VR Classroom*, a prototype virtual classroom for synchronous remote participation. The goal is not to claim educational effectiveness from a small qualitative study. Instead, the goal is to identify how teachers understand the value, limits, and design requirements of social virtual reality for remote school participation in contexts of attendance difficulty.

2. Background and research questions

Prior studies show that immersive virtual reality can improve engagement and motivation in education, but the evidence also points to recurring constraints: onboarding effort, discomfort, content-production overhead, and the need to align immersive activities with existing pedagogy rather than replace it (Di Natale et al. 2020). Teacher-oriented platforms such as TeachInVR and VRTeaching demonstrate that classroom-focused virtual environments can support slide presentation, spatial organisation, and shared interaction, while also revealing practical challenges such as mental demand and the need for careful lesson orchestration (Schier et al. 2022, Glawogger et al. 2025).

This is especially important for students whose school participation is already fragile. Research on school anxiety indicates that virtual environments can provide controlled, lower-pressure encounters with school-related situations, but the educational use case remains distinct from therapeutic exposure: teachers need environments that support social connection, pacing, and everyday classroom management rather than stand-alone treatment sessions (Beele et al. 2024). Our design rationale therefore combined three ideas from prior work: social presence through embodied interaction (Riva et al. 2019, Hutson 2022), low-friction reuse of familiar teaching materials (Schier et al. 2022, Glawogger et al. 2025), and a complementary role for immersive learning within broader school workflows (Di Natale et al. 2020).

The study addressed two research questions: how do teachers perceive the pedagogical value of social virtual reality for remote participation by students experiencing emotionally based school non-attendance, and what design requirements do they identify for making such environments workable in practice?

3. Prototype and study

The prototype was a multiplayer virtual classroom that combined networked avatars, spatial voice communication, and a small set of shared classroom artefacts. These included slide presentation, a timer, and manipulable objects that could be used for explanation, pacing, and informal interaction. The prototype was intentionally framed as a bridge technology: a place for discussion, orientation, and social contact, not a complete replacement for desktop-based schoolwork.

Three teachers from Nymarkskolen, a public school in Slagelse, Denmark, tested the system and then participated in a facilitated focus group. The sample was small, but the study aim was also narrow. Following the logic of information power in qualitative sampling, we treated the focus group as an early requirement-elicitation exercise with domain experts rather than a basis for generalisable claims (Malterud et al. 2016). The session therefore prioritised practitioner insight over breadth. Before the discussion, participants completed a short exploratory demonstration of the virtual classroom together, allowing them to experience its core features and interactions firsthand.

The focus group concentrated on four topics: where virtual participation might be useful for students with emotionally based school non-attendance, which classroom interactions felt educationally meaningful, which risks or barriers teachers anticipated, and what teacher controls would be required for real use. The discussion was recorded and transcribed using a locally deployed instance of WhisperX (Bain et al. 2023), an open-source automatic speech recognition toolkit. The transcript was subsequently reviewed and corrected by the first author before being

coded using reflexive thematic analysis (Braun & Clarke 2006); single-coder analysis is a recognised limitation, but it is consistent with the exploratory, requirement-elicitation framing of the study rather than a claim to theoretical saturation. The analysis looked for recurring patterns in how participants described participation, social connection, classroom management, and integration with existing school practice.



Figure 1: Screenshot of the VR Classroom prototype showing student avatars and interactive objects used to support synchronous remote classroom participation.

4. Findings

Teachers consistently described the virtual classroom as a low-pressure way of reconnecting students with school participation. Because the student could join from home while still entering a shared school-like space, teachers saw the prototype as a practical middle ground between absence and full physical attendance. This was considered especially relevant for students who may want contact with school but struggle with the sensory, social, or emotional demands of being physically present for an entire day. This suggests that the environment should support easy entry, temporary withdrawal, and re-entry without making the student feel that they had failed the session.

The second theme concerned embodied social presence. Participants repeatedly contrasted the prototype with videoconferencing tools, arguing that shared space, avatar embodiment, and object-based interaction would make it easier to establish rapport and maintain attention. The value was not realism for its own sake. Rather, teachers cared about readable cues: who is present, who is speaking, where attention is directed, and how informal interaction can help rebuild trust. This aligns with previous arguments that embodiment in social virtual reality may reduce some of the pressure of face-to-face interaction while preserving a sense of togetherness (Hutson 2022, Riva et al. 2019).

At the same time, teachers were explicit that social presence alone would not make the system educationally usable. A third theme was the need for strong teacher orchestration. Participants wanted to preserve playfulness because it could lower barriers and support relationship building, but they also wanted clear mechanisms for pacing activities and reducing overstimulation. In practice, this meant asking for functions such as muting, limiting movement, controlling object availability, and transitioning cleanly between open interaction and focused instruction. Teachers

also emphasised that virtual reality would work best when part of a hybrid workflow. They imagined using the headset for welcome routines, discussion, and social reconnection, then shifting students back to familiar desktop tools for writing, complex notation, and longer individual tasks.

5. Discussion and conclusion

Addressing the first research question, teachers perceived the pedagogical value of social virtual reality primarily as a complementary participation layer rather than a replacement classroom. Compared with videoconferencing and telepresence approaches, they saw it as offering a stronger sense of shared space and relationship building, but considered that benefit worthwhile only if the environment remains manageable, low-pressure, and tightly connected to ordinary school routines (Fletcher et al. 2023, Glawogger et al. 2025). Addressing the second, the design requirements teachers identified are: support low-commitment entry and exit, prioritise readable embodied cues over visual complexity, give teachers direct control over pace and stimulation, and design for hybrid use rather than full virtual substitution.

These findings should be interpreted within the limits of an exploratory study with three teachers from one school. They do not show student outcomes, sustained adoption, or long-term educational benefit. They do, however, offer a clearly delimited contribution: an empirically grounded account of what teachers require from a social virtual classroom if it is to support remote participation for students experiencing emotionally based school non-attendance. Whether this kind of mediated participation later contributes to return-to-school processes remains for future longitudinal study.

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References

- Bain, M., Huh, J., Han, T. & Zisserman, A. (2023), Whisperx: Time-accurate speech transcription of long-form audio, in 'Proceedings of Interspeech 2023', pp. 4489–4493.
- Beele, G., Liesong, P., Bojanowski, S., Hildebrand, K., Weingart, M., Asbrand, J., Correll, C. U., Morina, N. & Uhlhaas, P. J. (2024), 'Virtual reality exposure therapy for reducing school anxiety in adolescents: pilot study', *JMIR Mental Health* 11, e56235.
- Braun, V. & Clarke, V. (2006), 'Using thematic analysis in psychology', *Qualitative Research in Psychology* 3(2), 77–101.
- Di Natale, A. F., Repetto, C., Riva, G. & Villani, D. (2020), 'Immersive virtual reality in k-12 and higher education: A 10-year systematic review of empirical research', *British Journal of Educational Technology* 51(6), 2006–2033.
- Fletcher, M., Bond, C. & Qualter, P. (2023), 'User perspectives of robotic telepresence technology in schools: A systematic literature review', *Educational Psychology in Practice* 39(2), 117–134.
- Glawogger, F., Holly, M., Stang, J. T., Schumm, H., Lang, F., Criscione, E., Pham, J. D., Wagner-Hartl, V. & Pirker, J. (2025), 'Vrteaching: a tool for virtual reality remote lectures', *Frontiers in Education* 10. <https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2025.1608151/full>

- Hutson, J. (2022), 'Social virtual reality: Neurodivergence and inclusivity in the metaverse', *Societies* 12(4), 102.
- Leduc, K., Tougas, A.-M., Robert, V. & Boulanger, C. (2024), 'School refusal in youth: A systematic review of ecological factors', *Child Psychiatry & Human Development* 55(4), 1044–1062.
- Malterud, K., Siersma, V. D. & Guassora, A. D. (2016), 'Sample size in qualitative interview studies: Guided by information power', *Qualitative Health Research* 26(13), 1753–1760.
- Riva, G., Wiederhold, B. K. & Mantovani, F. (2019), 'Neuroscience of virtual reality: From virtual exposure to embodied medicine', *Cyberpsychology, Behavior, and Social Networking* 22(1), 82–96.
- Schier, F., Chandran, K. & McGinity, M. (2022), 'Teachinvr: A virtual reality classroom for remote education', *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* p. 283–286.