

## Being there is not enough: Telepresence robots and digital inclusion in learning environments

Dr. Ali Asadi

*University of Southern Denmark*

### Abstract

Telepresence robots are increasingly used to support students who cannot physically attend school or university. Compared with video conferencing, these robots can offer mobility and a sense of presence in the classroom. However, being connected to the classroom does not necessarily mean that the remote student is being included in learning activities and/or social and informal interaction. This conceptual article proposes a socio-technical framework for understanding and facilitating digital inclusion in learning environments mediated by telepresence robots. Drawing on previous research on telepresence robots, digital inclusion, hybrid learning, and human-robot interaction, this work proposes that inclusion is formed over time and needs to be constantly facilitated, often through the alignment of two interdependent dimensions. The first dimension, i.e., technical-embodied affordances, includes the robot's design and technical features that provide the capacity to support access and remote agency. The second dimension, i.e., social-pedagogical arrangements, includes classroom practices, teacher strategies, role assignment, peer norms, peer anchoring, emotional support, social recognizability, and participation structures that make the remote student visible, present, and connected. The framework suggests that the alignment of these dimensions can then create an environment in which remote students can become socially recognizable, i.e., visible, addressable, and consequential members of classroom activity. Therefore, the article argues that digital inclusion should not be evaluated only by whether or how telepresence robots provide access, but by whether they support meaningful participation and interaction.

**Keywords:** Digital Inclusion, Telepresence Robot, Socio-Technicality, Mediated Communication, Hybrid Learning Environment