



Virtual Social Spaces: Potentials for Construction Education Applications



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Introduction

- The reality of COVID-19 public health concerns have forced construction educators to move to online delivery of their courses.
- However, the traditional online learning management system (e.g., CANVAS) and videoconferencing platforms (e.g., Zoom) cannot appropriately substitute the in-person communication needs and engage the students.
- The study introduces Virtual Social Spaces (VSS) with innovative interaction affordances and immersive experience are well poised to supplement current online construction education.

Methodology

Research aim: explore the potentials of VSS for construction education.

- Providing a comprehensive overview of VSS applications areas
- Reviewing the popular VSS platforms currently available on the market
- Discussing the potentials of VSS for construction education.



Data collection applied a content analysis-based literature review to explore the topic.

Figure1: Keywords Word Cloud

Virtual Social Space

Virtual Social Space (VSS) is a persistent 3D environment where users co-exist through their avatars to explore, build, interact, and communicate in the shared virtual space

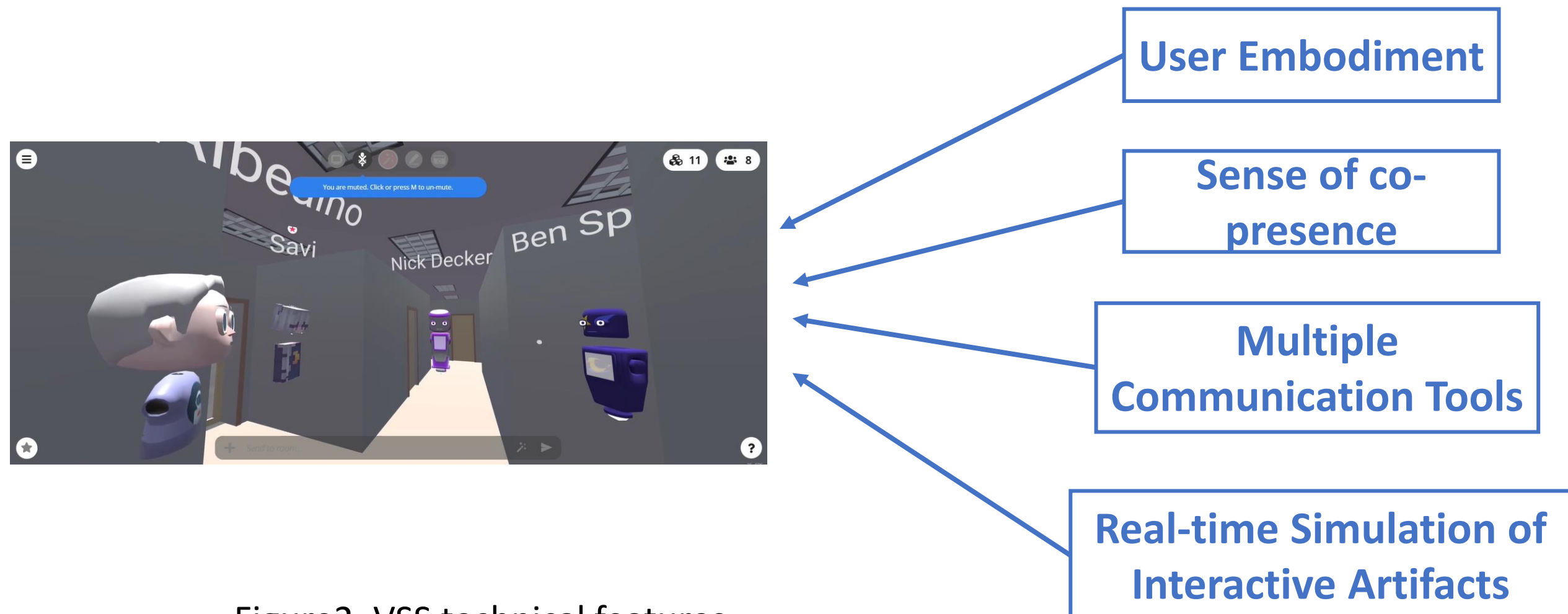


Figure2: VSS technical features

Common Application Areas



Communication and Collaboration Affordances

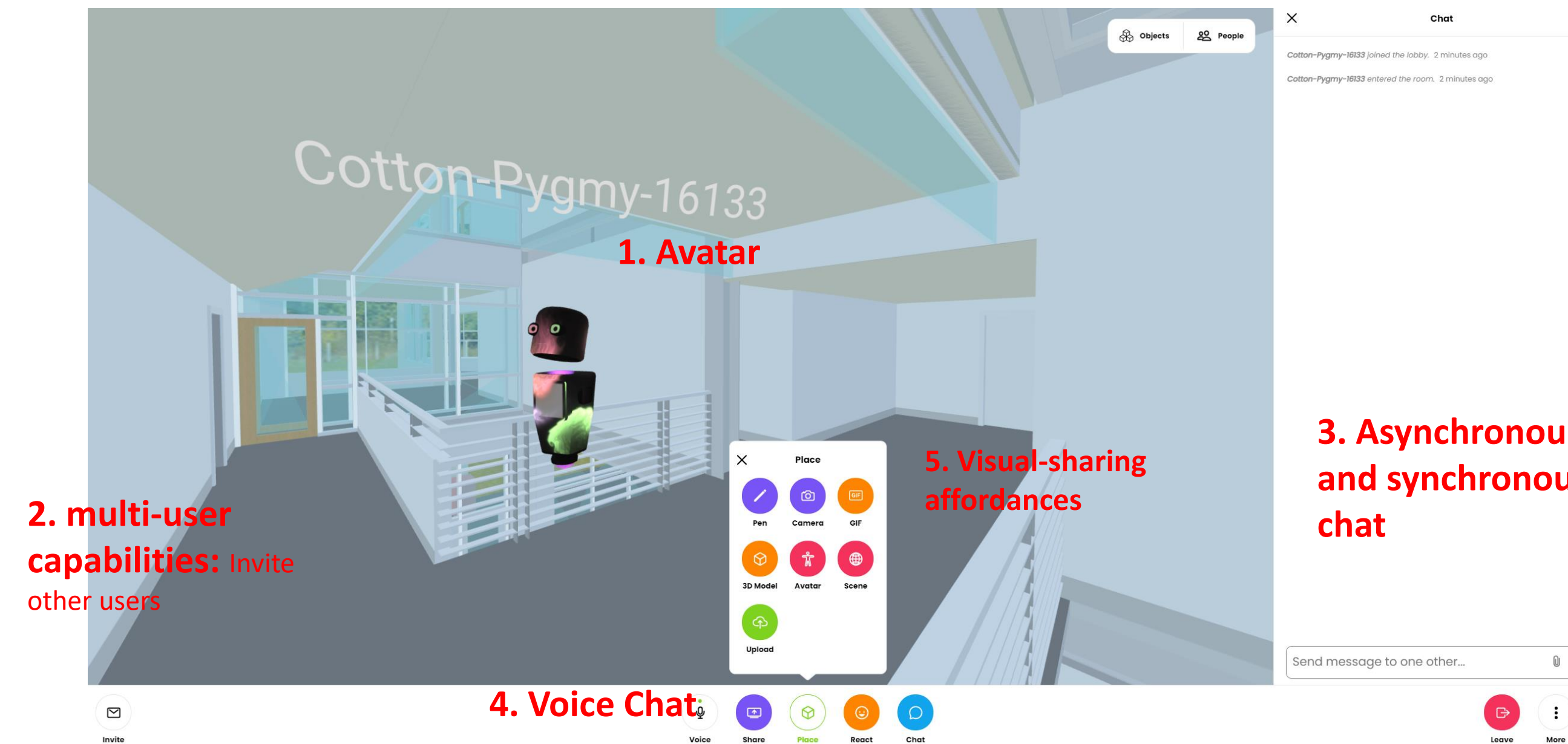


Figure 3: Mozilla Hubs Interfaces

VSS for Construction Education

Limitation in traditional construction courses:

- Site visit with conflicted class schedule
- Physical space with a risk of injury
- Limited understanding in 2D plan reading.



(ROSE Builder, 2017)



- VSS integrates the VR technology to help students gain a sense of being on a construction job site and interact with various objects on the site in a safe environment.
- VSS's communication and collaboration affordances enhance students' collaborative skills by role-playing and knowledge-sharing.

Table1: Communication and collaboration affordances in Virtual Social Spaces

VSS	Avatars		Multi-user capabilities	Communication tools		Visual-Sharing Affordances
	User gestures			Voice Chat	Text-based tool	
Vtime XR	X		X	X		
AltspaceVR	X		X	X		
Anyland	X		X	X		
VRChat	X		X	X		
RecRoom	X		X	X	X	
Virbela	X		X	X	X	X
Mozilla Hubs	X		X	X	X	X
Engage	X		X	X	X	X
Second Life	X		X	X	X	X
Rumii				X	X	
iSee VC			X	X		
SanSar	X	X	X	X	X	
NeosVR		X	X	X	X	
JanusVR		X	X	X	X	X
Spatial						

Table2: Hardware Requirements in Virtual Social Spaces

VSS	Hardware			
	Output		Input	
Vtime XR				X
AltspaceVR	X	X	X	X
Anyland	X	X	X	X
VRChat	X	X	X	X
RecRoom				
Virbela Campus	X	X	X	X
Mozilla Hubs		X	X	X
Engage				
Second life	X	X	X	X
Rumii				
iSee VC	X		X	
SanSar	X	X	X	X
NeosVR				
JanusVR	X	X	X	X
Spatial				