EFFECTS OF VIRTUAL REALITY ON COLLABORATION BETWEEN LEARNERS

Do visualizations of activities have an effect on a group's level of social modes of co-construction while collaborating inside Virtual Reality?

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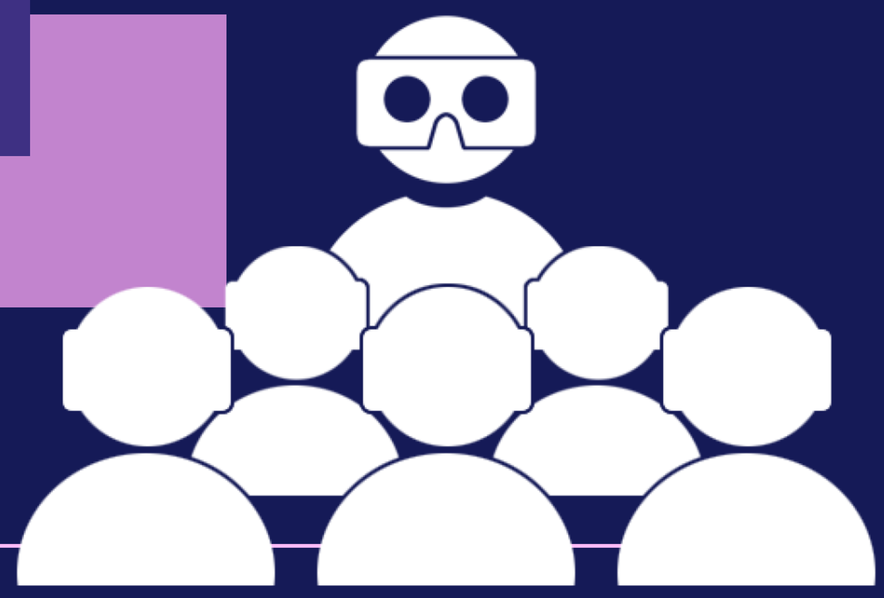


INTRODUCTION

- Linton et al. found improved performance in group settings compared to individual settings [2]
- VR enables studying human interactions and collaboration in a controlled environment through experiments

- Social modes of co-construction play a role in shaping the dynamics and outcomes of collaborative learning [4]
- Visualization of activities have an impact on collaborative learning by enhancing comprehension, engagement, and interaction among learners [5]
- Gain valuable insights into how VR technology affects collaborative learning

TERMINOLOGY

Virtual Reality - Computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings.

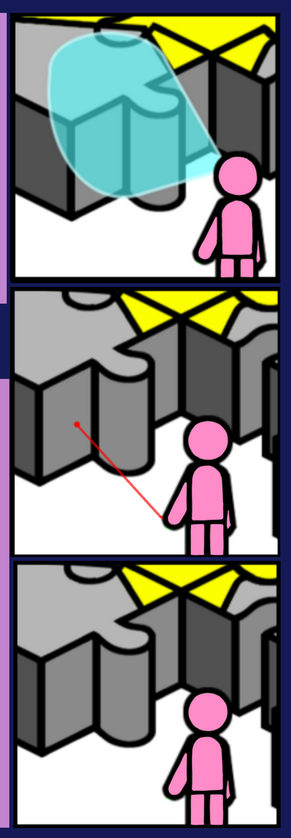
Visualizations of activities (VOA) - Making actions and activities of users visible to each other in the virtual world that would not be visible in the real world

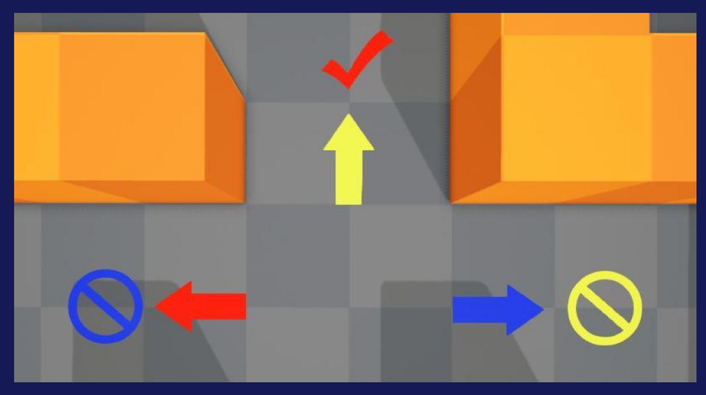
Social modes of co-construction (SMOCC) - To what extent learners refer to contributions of their learning partners [1]

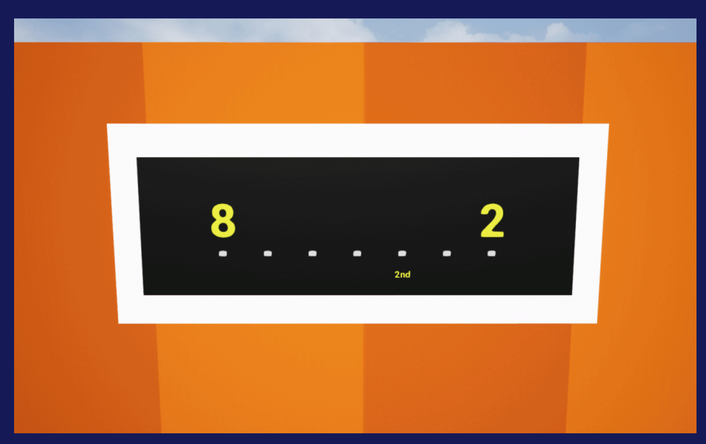
METHODOLOGY

- Data consented to acquire:
- Audio and Screen recordings
- Task performance & Questionnaires

- Usage of the framework of social modes of co-construction to rate a participant's utterance [1]

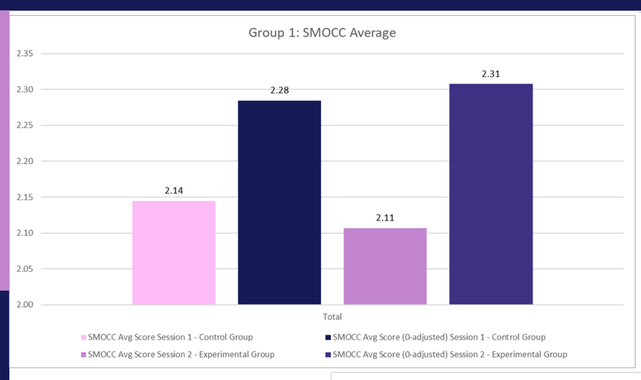


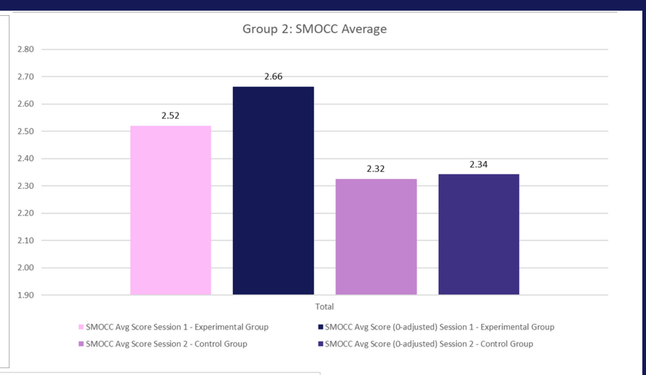


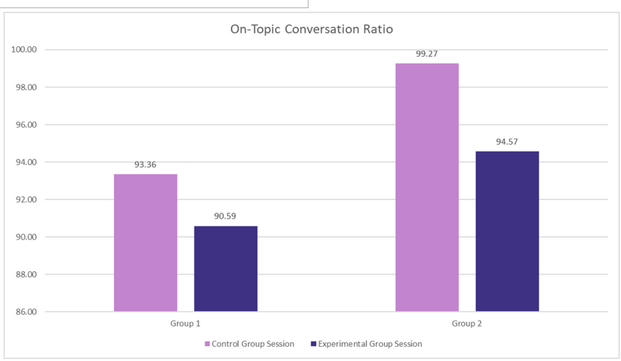


RESULTS

- Participant's SMOCC score = SMOCC ratings summed up / Total number of lines spoken
- Group's SMOCC score = Total Participants' SMOCC scores summed up / 3
- Off-topic talk has been factored out in the SMOCC scores (0-adjusted)







DISCUSSION

- Minimal decrease in SMOCC scores
- Group 1 non 0-adjusted SMOCC score unexpectedly lower on experimental run
- SMOCC scores support positive influence of VOA on SMOCC

- Interestingly, participants more distracted on experimental sessions

CONCLUSION AND FUTURE WORK

- Yes, VOA positively affects SMOCC
- However, conclusion is only based on 2 groups
- Cannot conclude anything in a broader aspect beyond the 2 groups
- In the future, test out on more groups to find statistically significant results

- Future works may research in-depth:
- Motivations of using VOA
- Distraction by using VOA
- Correlation between contribution and referral of contribution

References
[1] Armin Weinberger and Frank Fischer. A framework to analyze argumentative knowledge construction in computer-supported collaborative learning. Computers Education, 46(1):71–95, 2006.

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[5] Sung-Hee Jin. Using Visualization to Motivate Student Participation in Collaborative Online Learning Environments. Journal of Educational Technology & Society, 20(2):51-62, 2017.