

Collaboration could improve learning in educational VR

by Erik Welling

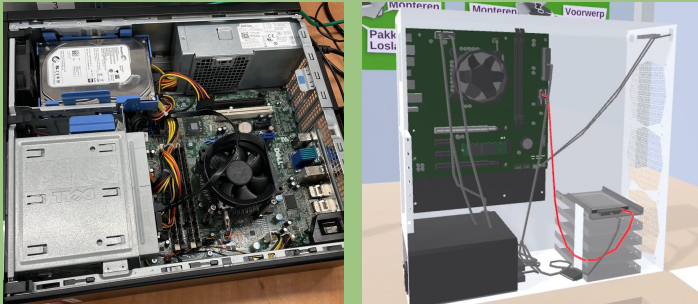


The experiment

An Educational Virtual Reality Game (EVRG) was made to teach students about computer assembly. Students can freely move around in the virtual environment and interact with and assemble computer components.

Students were split into two groups. One group was allowed to collaborate in pairs, meaning they were put in the same virtual environment, could see each others virtual characters and interact with the same objects. The other group had to play the game individually. The goal is to investigate whether two-person symmetric collaboration improves student motivation and learning efficiency within EVRGs.

After multiple sessions of experiencing the game each student was asked to fill in a questionnaire and took a standardized exam. Each question on the questionnaire was based on a different factor that can affect learning efficiency according to the Cognitive Affective Model of Immersive Learning (GAMIL).



The results

Results were gathered from 20 participants. The results do not show enough evidence to be able to state that the collaborating students were significantly more motivated when compared to the students that were not allowed to collaborate within the game.

The students that were allowed to collaborate reported significantly higher factual and procedural knowledge on the questionnaire, as well as significantly more self-efficacy. However, they did not score significantly higher on the exam. This could either mean that collaboration improved their self-efficacy, leading to improved learning rates, or it could mean that students only think they improved their knowledge more because of the increased self-efficacy.

Overall, almost all results were higher for the students that could collaborate, even though most of the results were not significant. This pattern could indicate that repeating the experiment with more participants could lead to more conclusive results.

