In Mindstorms, Papert [1] advocated “the construction of educationally powerful computational environments that will provide alternatives to traditional classrooms and traditional instruction.” (p. 182), whilst acknowledging that the technology of the day was limited in its capabilities and functionality. Since then considerable work has been done to create tools such as Lego Mindstorms [2], Scratch [3] and Toon Talk [4], which embody a constructionist approach to learning.

Virtual worlds such as Second Life provide a range of perceived educational affordances which are strongly aligned to the principles of constructionism [5], however both building and programming interfaces present a ‘high floor’ or high barrier to entry that the novice needs to master before they can engage in any constructionist process.

To address this problem, we have designed SLurtles (programmable Turtles in Second Life) by aligning the principles of constructionism and the perceived educational affordances of Second Life [5]. Following the tradition of constructionist tools such as Turtle geometry; Mindstorms; and Lego, and combining them with Scratch for Second Life [6], SLurtles have been developed as a low floor, high ceiling, programmable building tool for Second Life [5], allowing learners to easily engage in constructionist activities.

This paper presents SLurtles in action and the results of an exploratory case study into the use of SLurtles as constructionist ‘objects-to-think-with’ in the virtual world of Second Life.

To explore the use of SLurtles in action, 12 participant groups used SLurtles and Scratch for Second Life to build and programme interactive installations in a space provided for them on a dedicated island in Second Life. Each group consisted of two students on a multidisciplinary postgraduate course in technology and learning. While groups were able to meet face-to-face, they mostly worked on the installation at a distance from one another.

Following completion and presentation of the installations, participants completed a short profiling questionnaire. Semi-structured interviews, written reflections, chat logs from Second Life and the artefacts created by the learners were qualitatively analysed using the constant comparative method and theoretical sampling.

Participants described a sense of self and presence in Second Life which supported communication and collaboration as well as the construction of the installation. Although most participants had no prior experience of Second Life or any programming experience, they described a “sense of achievement” in what they had been able to create with the SLurtles, which included an interactive piano keyboard which an avatar can play and a story narrative which responds to the actions of an avatar. They described using SLurtles as “engaging” and that the process affected their “way of thinking”. Constructionism emphasises the role of making artefacts public and this was supported by the affordances of Second Life. Participants described the public nature of the environment as driving their designs, affecting their ideas and influencing their notions of ‘sharing’. Overall the findings show that SLurtles lower the floor for the novice enabling them to engage in a constructionist learning experience, whilst supporting the high ceiling for those with experience of virtual worlds, building and programming. SLurtles embody a constructionist approach to learning within virtual worlds which can provide a powerful new computational environment for constructionist learning to take place.
References:


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