

## **Encouraging Participation in Coding Activities in Minecraft by Utilizing a Semi-Autonomous Programmable Robot Avatar**

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Utilizing Minecraft to teach computer science is not a novel concept. Multiple lesson plans exist for coding interfaces which have been created as a modification to the game. However, we believe that these other coding elements, which do work in some instances and can be effective teaching tools, suffer from certain design decisions that make using them unattractive to kids as a viable tool in the game. For instance, these interfaces often obscure the whole screen so that the user cannot observe the objective they are trying to work towards. Further, the agents that the interfaces control often don't act like any other element in the game, in most cases due to the limitations of the type of game agent they are built upon. Most of these agents can only move in cardinal directions and turn in 90 degree angles. These design decisions surrounding the interface and the agents themselves lead to frustration from students and is especially acute when the activity they must complete is easier for them to do as the player character. In this poster we present our robot avatar, a semi-autonomous game agent that is programmable using Python and a simple API. This avatar is paired with design improvements to the programming interface based on our observations of students use of the aforementioned interfaces. We believe that if a semi-autonomous agent can be utilized to reduce the time spent doing mundane repetitive tasks the children will be more likely to adopt and reuse the agents so that they can spend more time in the game on tasks in which they enjoy. By pairing this agent with a simple ergonomic interface and common in game goals it can potentially lead to adoption and utilization of the agent as a tool for continued engagement in programming opportunities.