Scientific Method postmortem

This was my first attempt at a lesson. I saw lessons in Minecraft as abstractions of existing lessons. Since the world in Minecraft does not map at all to our physical world, I thought of what I can do that would abstract this idea. Reflecting on science, I felt that I could teach the Scientific Method and its process by using Minecraft as a platform for students to ask questions about the Minecraft world and then constructing a way to answer their question.

This lesson was introduced first to the team who had understood it nicely but had expressed concerns about its use in the classroom. When I had introduced it to teachers, they understood what it was trying to teach, but they started to disrupt and distract each other with the materials that were provided to carry out the experiments.

Playtest Data

Internal Playtest

Naïve teacher playtest with four middle school science teachers

What went right?

* **Concept abstraction.** Minecraft handles itself in a way far different from how we expect our normal world to operate. I proposed four topics (Inelastic collision, explosion radius, projectile distance, and absence of light) with questions and an associated, guided experiment to carry them out. In our playtest with teachers, they understood what the experiments were set out to answer
* **Separated bays for each experiment.** By creating different spaces for each experiment, it minimizes the risk of one experiment interfering with another. With that said, a determined student can still disrupt any experiment.

What went wrong?

* **Must be facilitated**. The way the experiments are set up now, no one read the signs and proceeded to use the materials as they saw fit. I had to serve as a facilitator and explain what each experiment was doing, especially to playtesters who were not as familiar with the vocabulary of Minecraft.
* **Disruptive behavior is distracting in such a driven lesson.** This lesson was designed to be guided. In two experiments, TNT and bows with arrows are available. This inevitably led to the playtesters using them in unintended ways because it was much more appealing to them.

What was suggested to change?

* **Solo play.** Let students roam the map on their own to grasp things at their own pace. With a crowd of 10 students around each experiment, the lesson objectives have a higher chance to become muddled.
* **Angle Data for shooting the bow and arrow.** Currently, there is no way to see the player camera’s angle above the horizontal plane. One suggestion was to create an arch way at the beginning of the range with colors that lead to optimal or sub-optimal shooting distances.

Conclusion

This lesson was a great proof-of-concept in the sense of showing what can be abstracted within the Minecraft environment. The scientific method is a process to understand the world around us and that process maps well to Minecraft because participate in the same process. Unfortunately, basic questions about our actual world map better to learning the scientific method because there is more of a knowledge base about how the actual world operates. In contrast, the Minecraft world and its associated vocabulary is unfamiliar so to truly grasp the scientific method in this context, an advanced knowledge of Minecraft is recommended.