

Learning from Experience: Using Games to Build Analogical Scaffolds

A game is a structured decision-making environment. The decision space afforded to a player in a game is determined by the game designer. Player motivations are captured by the goals of the game, and the rules of the game determine the decisions and interactions players confront during play. These features make games valuable pedagogical tools. I demonstrate two examples of using games to create experiences students can reflect on to draw out philosophical concepts and theories. The games teach the veil of ignorance, and basic concepts in philosophy of science. We will discuss games and game design principles as tools that can be used to provide learning scaffolds in the form of experiences that are similar to the content or subject of philosophical concepts and theories. Participants will begin the process of developing a game or activity using the principles and a game design model provided in this session.

Length: 90 minutes

Gamification refers to the application of game-thinking and game mechanics in non-game contexts, such as the classroom. It is argued that because game mechanisms are fun, draw attention, foster engagement and incentivize learning that gamification is a valuable tool to have in one's pedagogical toolbox (Arnold 2014; Erenli 2013). Merely "pointsifying" learning, by layering 'points', 'levels' or 'quests' on top of learning activities, is not sufficient to significantly and positively impact learning outcomes. It can, for example, lead learners to treat the 'game' aspects of the task as just another hurdle to overcome, which impedes learning more than it helps (Sierra 2013).

I suggest, instead, that the pedagogical opportunity afforded by games and game-mechanics goes beyond their ability to motivate and engage students. Creating a game is creating an experience that is lived by the player. Games, thought of as tools for creating experiences, can be used in the philosophy classroom to scaffold learning. I characterize an experience that students can reflect on to draw out philosophical concepts as an analogical scaffold. Games can provide these scaffolds by generating experiences that are similar to the content of a philosophical theory, or to the subject matter that theory is about.

Session Overview

This session has four parts and will proceed as follows:

(1) I will briefly highlight relevant evidence and concepts from the literature on gamification and analogical learning to support the use of games in teaching I advocate for.

(2) In parts 2 and 3, participants will play and discuss two games. The first creates an analogy to the content of a philosophical theory, specifically Rawls' Veil of Ignorance.

(3) The second game creates an analogy to the subject matter of concepts in philosophy of science, specifically the practice of science.

(4) In the final part of the session, participants will, using a game design framework developed for this session, begin the process of creating a game, or activity, that can support learning in their classroom by creating an experience to be used as an analogical scaffold.

Part 1: Analogical Scaffolds and Game Experiences

Teaching by analogy has been shown to improve learning in high school physics classrooms on a wide range of topics (Nashon 2004; Podolefsky & Finkelstein 2007; Davies 2014), and to help young students draw better connections between concepts and reduce the cognitive load of learning mathematics (Richland & Hansen 2013; Richland & McDonough 2010). Analogies are used by scientists to improve understanding, for instance, in making inferences about microscopic events and phenomena (Coll, France & Taylor 2005). The process of using analogies to support learning has been called “analogical scaffolding” (Podolefsky & Finkelstein 2007). An analogical scaffold is a familiar experience that students can reflect on to ground their understanding of new, complex concepts and theories. A challenge for using analogical scaffolding, is in creating classroom experiences that bear analogical relations to the concepts and theories students are learning about (Olivia, Azcarate & Navarrete 2007). This is a challenge games can be used to resolve.

Creating a game involves creating a structured decision-making environment with a situating narrative. The goals, rules and narrative of a game constrain the experience of playing the game. There are two ways that such an experience can become an analogical scaffold for learning philosophy. The first is by similarity to the content of a thought experiment, philosophical concept or theory. Games provide a way of living, instead of thinking about philosophical theories, thought experiments and concepts. The second is by bearing resemblance to the subject matter that the philosophical concept or theory is about. Game derived experiences can provide an immediate grounding for discussing these concepts without requiring students to possess detailed knowledge of the subject, such as the practice of science in the case of philosophy of science.

Part 2: Behind the Veil: Introducing Social Contract Theory (Analogy to Content)

Rawls’ theory of justice involves negotiation from behind the Veil of Ignorance. While behind the Veil of Ignorance, participants know nothing about their place in society, class, position or social status. The reasoning for, and consequences of, this proposal can be difficult to conceptually grapple with. To this end, I have developed a game that simulates the Veil of Ignorance. By simulating the process of social unfairness and negotiation behind the Veil of Ignorance, playing the game improves understanding of the appeal of social contract arguments, and helps students to remember the key elements of such arguments.

Part 3: Acting Like Scientists: Introducing Philosophy of Science (Analogy to Subject)

Teaching philosophy of science requires students to have a basic understanding of scientific practice, which is a barrier that instructors often struggle to overcome while teaching the topic to undergraduate students (Hardcastle & Slater 2014). I designed a game to overcome this challenge by creating an experience analogous to scientific research. In this game, players must infer the rules of another game using only photographs of the game being played. This is analogous scientist’s use of data to infer hypotheses. The experience of playing the game can be used to introduce and grapple with basic concepts from the philosophy of science, such as the underdetermination of theory by evidence.

Part 4: Creating Scaffolds by Designing Games and Activities

Designing games is difficult and time consuming. Games, broadly speaking, include a goal, which determines who wins, pieces, which players interact with, rules, which constrain how players interact with the pieces and achieve the goal, and narrative, which provides context and meaning to the goals and rules. To help make the design process easier, I provide a basic model for designing a game that supports learning in the same manner as those described above. The features of this model are informed by current research on gamification in education, which recommends having a clear goal, aligning learning content with game content, and avoiding reliance on external rewards (Kim 2015). The model starts from the content or subject that the game experience is meant to bear analogy to. A series of guided questions about the narrative of the game are used to determine an initial set of rules, goals and pieces. Participants will deconstruct the above examples using the model. Then we will, as a group, use the model to start designing games for use in the participant's' classrooms.

Conceptual Theme

A general theme of this session is finding ways to align student experience with the content and subject of philosophical theories. These experiences can provide students with valuable learning scaffolds. Games just happen to be a concrete, explicit, example of how this can be accomplished in the philosophy classroom.

Handouts and Resources Provided

Participants will receive a handout describing how to implement the examples discussed in the presentation, as well as a handout overview of the method for game design and the concepts discussed in this session.

After the presentation, these resources, as well as handouts for each of the games developed during the session, and a list of games and suggestions for how to use them in the teaching of philosophy, will be made available on my personal website.

Equipment Required

My session requires a powerpoint. I will provide all materials necessary to play the games that I will demonstrate in the session.

References

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