

Position paper for game theory and method course

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The problem

Serious games and educational video games has during the last three to four years been hyped as something that might revolutionize the school systems, especially by American researchers (ex: Gee 2003, Prensky 2005, Shaffer 2006). However, so far there is very little documentation which points towards any actual, realized benefits of using video games in schools. The reason for this, I will argue, is that the focus of the research has been on arguing and convincing that video games work in education instead of trying to understand if, how, and when they work in education. The reason for this is commercial interests and ideology.

Thus, there is a huge gap between the theoretical understandings of educational video game design and the realization of these game designs.

Purpose

In my PhD-project I attempt to create an empirically and theoretically based model for understanding the relation between educational goals and educational video game design. My focus is not on learning games, (entertainment games used for educational purposes) but on educational games (games designed specifically for being part of teaching a specific curriculum).

Research question(s)

What are the educational limitations of video games? What kind of content, skills, and attitudes can and can't we teach with video games? How can this knowledge help us in deciding when and how to design and use educational video games?

Hypotheses

Currently educational video games are a commercial success only in very specific areas: Health care, disaster prevention, the military, and economics. I believe the common denominator of these areas indicates that video games are well-suited for teaching where the subject involves traversing a closed well-defined system with interconnected variables. However, video games can only measure WHAT and not WHY a pupil performs a certain action. This makes video games less efficient for teaching the two higher cognitive skills reflection and critical thinking – two celebrated so-called “21st century skills”. This makes video games inefficient for teaching a large range of skills and subjects which require this kind of thinking.

Hypothesis 1: Video games are not a very efficient medium to use for teaching advanced skills such as reflection and critical thinking, so-called “21st century skills”. The reason for this is that computers cannot understand an utterance from a human about why the human performs a certain action.

Hypothesis 2: It might be possible to rethink video game design to let humans be part of the feedback loop between the playing pupil and the computer, in order to create a game system that can understand both the action, but also the argument for performing the action. This would make it possible to create a game system that could foster reflection and critical thinking.

Methodology

In order to approach the problem of the discrepancy between the theoretical conception and the intention of educational video game designs and the realization of these designs, I see several benefits in the philosophical position of pragmatism. Exactly what variant of pragmatism I will use is not yet certain, but it will probably be inspired by John Dewey. The main benefit of pragmatism in relation to my purpose is that it underlines the primacy of practice, stating that practical consequences or real effects are vital components of both meaning and truth. Thus, the truth and meaning of anything we say about educational video games will be vastly more interesting if we can base it on actual experiences of the practice of the usage of the game. A concept related to this is William James’ radical empiricism, which states that experience includes both particulars and the relations between particulars, and therefore both must be explained. Therefore, it is not enough to measure sense data on a physical level in order to understand truth, unless this data can help explain how meaning, value, and intentionality arise from it. This will inform my methodical choices.

In fact, I will argue that the social context of formal education is so advanced that it might be impossible to conceptualize it to a degree which creates an understanding sufficiently refined to inform design. Therefore, the design and theorizing must happen in an iterative manner, and therefore I see it as necessary to apply design-based research (Reeves 2003).

Method

In design-based research or development research, the researcher first analyses a problem, creates a theoretically founded design intervention, tests the intervention in the proper context, refines the theory and the theoretically founded design, tests again etc. – oscillating between these different categories – not necessarily in a serial order.

Further, I am developing a meta-theory which can be used to analyze educational games and video games in relation to any subject and context. This theory will be based on Fredrick Barth’s anthropology of knowledge and Jan Klabbers’ conception of games as anthropology of knowledge. This meta-theory will be used to argue for and select appropriate learning theories and analytical methods for a given educational game for a given subject in a given social context.

In order to understand how an educational video game is used in a formal educational environment involving many actors with different roles, interpretations, and intentions I see video ethnography as the best option for documenting and capturing what goes on. By supporting video recording with post interviews of teachers and pupils the researcher gets two inputs (interview and footage) which can be used to interpret what went on when the video game was used. Based on my socio-cultural understanding of the classroom I do not plan to use quantitative methods for measuring learning, I might choose to use mixed-methods, though.

Besides analyzing educational games and video games and conducting video ethnography in classrooms, I will inform the design of new educational video games at the developer Serious Games Interactive. These designs (GC: Palestine, GC: Latin America, and Playing History) provide the cases for the different iterations in my design-based research cycles.

Theory

Since I am appreciating the primacy of practice, and the advanced social context where the video game design is going to be applied, I adhere to socio-cultural learning theory (ex: Vygotsky and John Dewey). However, constructivist and cognitivist learning theories (ex: Kolb's experiential learning) might also be applied to understand what goes on at the individual level between the pupil and the game.

In order to understand the social context of the formal educational environment and how pupils engage with the video game design, I will apply Erwin Goffman's notion of frames (Goffman, Fines, Linderoth). I believe it might be possible to argue that the formal educational context of the realized video game design and the frames the designer can suppose the pupils will oscillate between makes it possible to conceptualize educational gaming experience as something different than entertainment gaming experience, which might again inform the conceptualization of distinct educational game design patterns.

For understanding how one can teach higher cognitive skills such as reflection and critical thinking I apply the learning theories of dialogical education – primarily from Wegerif, Bakhtin, and Vygotsky.

To theorize educational video game design I look upon the vast theory on educational games and simulations going back to the 50s (Abt, 1968), but I also draw on newer theory on video game design (Salen & Zimmerman 2003).

My position in relation to the approaches to games described by the course

Creating theories which have the purpose of understanding and informing educational video game design is difficult to fit into one of the possible approaches (sociology, philosophy, psychology, game design). My work is definitely within sociology since it very much concerns the social activities and social constructions within and around games, since I draw on socio-cultural learning theory. On the other hand, learning theories and psychology are heavily linked, in my work I plan on attempting to couple the frame of the

game with the frame of the educational context by making the goals of the game equal to the goals of the educational context. This will therefore both relate to sociology and psychology, and ultimately to game design.

All in all one could say that my work will be game design informed by sociology and psychology. Therefore, I will put my paper within the game design approach.

Literature

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