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Design for Transfer

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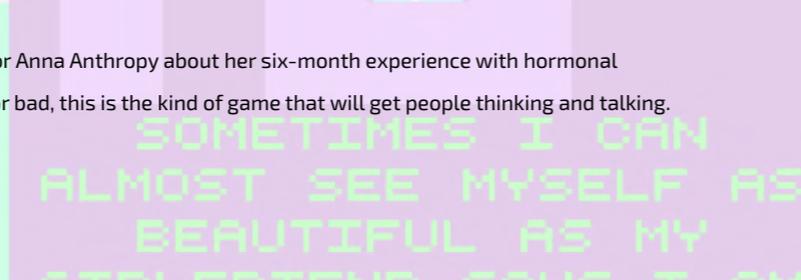
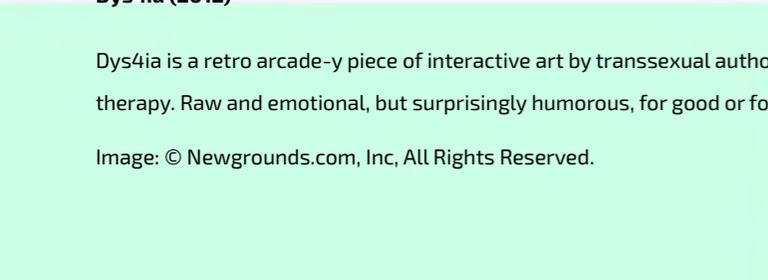
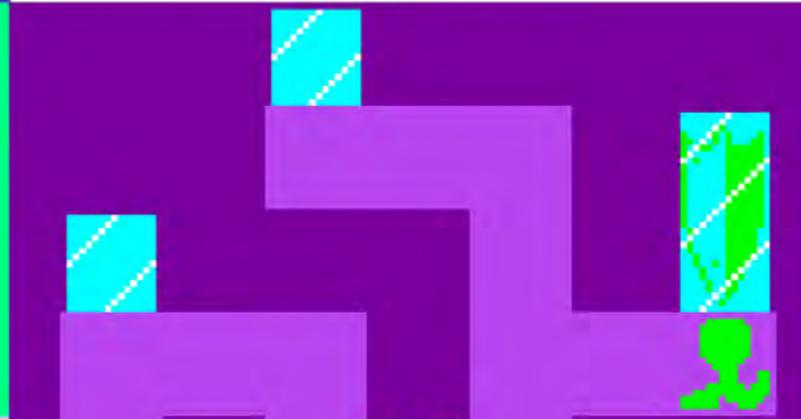
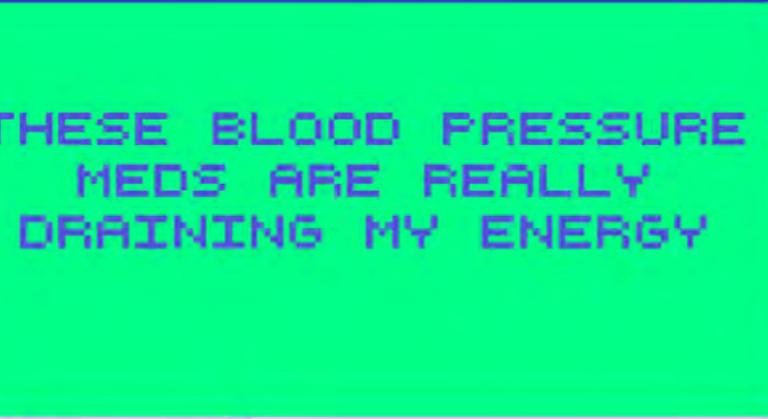
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H3: Design for Transfer

Meaningful Play through Metaphorical Recontextualisation

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Dys4ia (2012)

Dys4ia is a retro arcade-y piece of interactive art by transsexual author Anna Anthropy about her six-month experience with hormonal therapy. Raw and emotional, but surprisingly humorous, for good or for bad, this is the kind of game that will get people thinking and talking.

Image: © Newgrounds.com, Inc, All Rights Reserved.

Abstract

This paper explores the use of design for transfer in simulations and serious games. Key in this study is the hypothesis that meaningful play can be achieved by designing for figural transfer by the use of metaphorical recontextualization. The Game Transfer Model (GTM) is introduced as a tool for designing and thinking about serious game design, stretching the possibilities from high-fidelity simulations to metaphorical fantasy worlds. Key for an in-game learning experience is the presence of conceptual continuity defined by the congruence of fidelity-elements. The GTM differentiates between realisticness and realism. Where simulations use the road of literal transfer and therefore relies on realisticness and high-fidelity, figural transfer can be a guiding principle for serious game design, using metaphorical recontextualization to maintain conceptual continuity. Conceptual continuity aligns fidelity and enables the game to connect its serious content to the realities of life.

Keywords:

Serious video games; figural transfer; game transfer model; metaphorical recontextualization; fidelity dissonance; conceptual continuity; meaningful play.

Introduction

Broadening the field of education with relatively new technologies as video games not only raises questions on their appearance and mechanics but surely needs rigorous research on how serious content can be integrated into a game, without harming the unique features games offer for learning.

'Other than pure entertainment' is part of the common definition of a serious game. The 'serious' adjective is needed to ensure the game will train, educate or inform. It also leads to an oxymoron, since games are inherently fun and not serious e.g., [1]. Serious seems at odds with play, and play is central to games [2]. Most serious games have been deliberately designed for learning or are so-called commercial off-the-shelf video games (COTS). The latter case opens opportunities for existing games to add to the educational field, causing the inevitable comparison between an educator's point of view on games and the world of the leisure games. In many cases, the serious part of serious games seems to justify the sacrifice of fun, entertainment, and aesthetics in order to achieve a desired goal by the player. An often-observed phenomenon is that despite rules and guidelines, efforts in making serious games don't result in a good game, mostly because the unique motivational features of games are lost in the process. This paper argues that (1) with the choice

of a video game as a medium for learning a choice for essential design principles comes along, and (2) in order to maintain these principles, educators must explore and adopt new views and insights on learning.

Education needs good games

Well-designed games have the ability to tempt and challenge people to engage in complex and difficult tasks, without forcing them to do so. Gee [3] believes it is the way that games are designed that makes them deeply motivating. Not just motivating to play a game, but to learn, to get better. He states that good games are good games because they touch a core element of human beings: a biologically need for learning. Studies on serious games frequently mention the importance of flow experience [4] as a central prerequisite for enjoyment, being the optimal balance between challenge and skill. By nature, games provide this balance, being adaptive and adaptable at the same time. Flow state induces a state of mind, causing players to have a heightened sense of presence through individual identity [5] engagement in the content, and intrinsically motivating to succeed in the challenge of the game's goal. Annetta [6] mentions flow as an underlying goal of all

good game design. Amongst others, important features of games are the game's ability to adapt to the skill level of the player, facilitate interactivity and enable discovery learning under the user's control. In fact, many studies on serious games show guidelines and design principles for good serious game design, so, what is keeping us from doing so? It is the medium itself and here aforementioned characteristics that make games suitable for learning.

Design for transfer

With the positive effects on learner motivation and learning outcomes in mind [7,8]; [9], educators must think of new ways to make serious matter suitable for gameplay. A transformation of current forms and beliefs on learning may be needed to make a more natural connection between the serious and the game. A possible way to make such connection can be found in thinking in terms of transfer. Although there's a wide variety of viewpoints and theoretical frameworks regarding transfer in the literature, seldom transfer is a starting point for education-ists in developing serious games. As in many cases of innovation, people tend to use known repertoire in a new environment: an interesting case of transfer in itself. There is a clear distinction between mere

learning and learning for transfer [10]. One could argue that modern education is mostly occupied with mere learning: passing tests and preparing for exams. How transfer takes place or even if transfer occurs, is mostly not an issue. This paper argues that a focus on transfer gives new perspectives on serious game design. Royer [11] mentions two classes of theories on the subject of transfer. The first is based on the idea that an original learning event and a transfer event have to share common stimulus properties. The second class of theories explains the occurrence of transfer in terms of mental effort and cognitive process. He also differentiates between literal transfer and figural transfer, a ranging with reminds in some ways to the low-road and high-road transfer, as described by Salomon & Perkins [10]. Royer [11] states that 'most of the material in the past literature on learning transfer could be included under the concept of literal transfer', implying a modest role for figural transfer in the educational field. Figural transfer may share similarities with high-road transfer, but it seems to have a place in its own right. It involves the use of existing world knowledge or schemata as a tool for thinking about or learning about, a particular problem or issue. This idea resonates with constructivist ideas about learning and cognitive theory and certainly becomes interesting when held next to game instances.

Conceptual continuity and Fidelity Dissonance

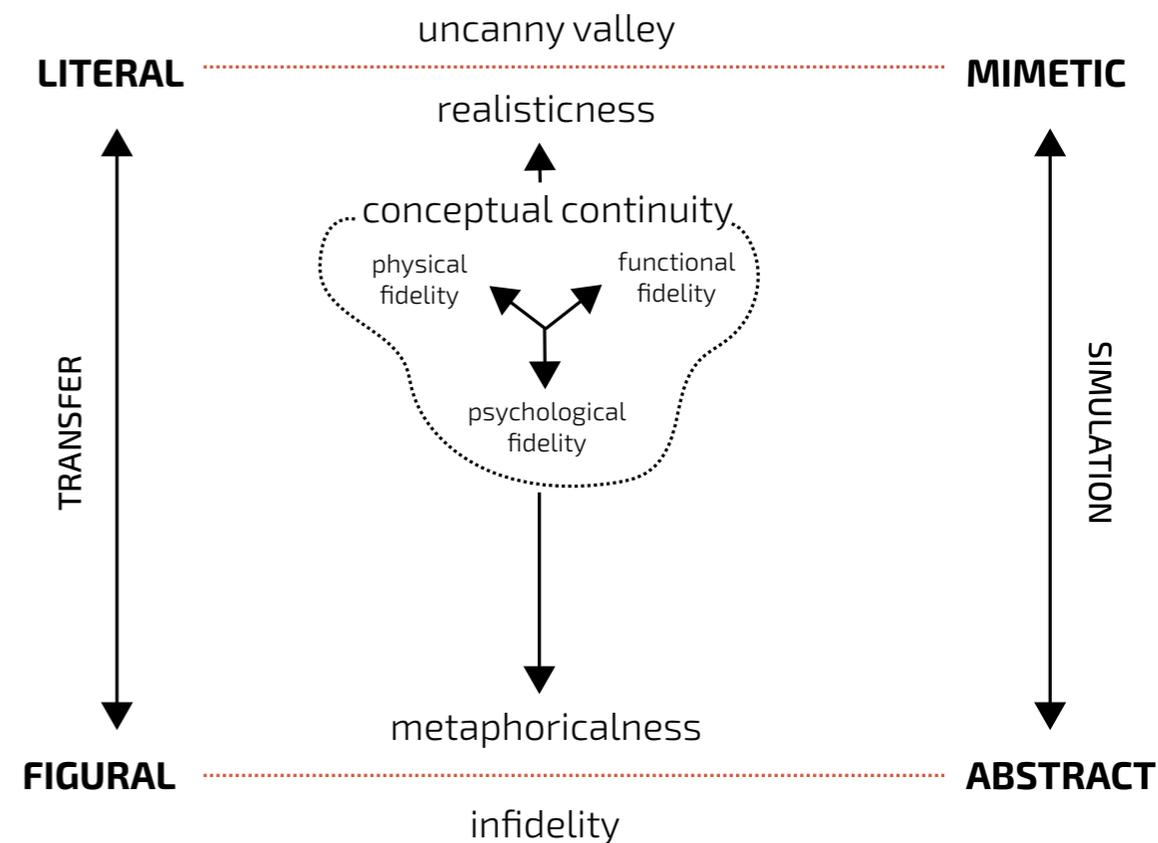
Flow state [4], as well as suspension of disbelief [12], are psychological states of mind, often mentioned to be essential to gameplay, or in the other words, can be induced by gameplay. It is these unique attributes that rely heavily on well-made design choices. Musician and composer Frank Zappa (1940-1993) introduced the term conceptual continuity, by which he probably did not have serious game design in mind, but referred to the importance of congruence in art. In game design, each element of the game is carefully chosen in order to put the player in the correct mindset to experience the game. In that way, games need conceptual continuity in order to facilitate suspension of disbelief.

In research, to some extent, the degree of realism is held to be conditional for transfer to occur. Fidelity is believed to be of importance in terms of relevance for learning and transfer [13], denoting the degree of similarity between the training situation and the operational situation, which is simulated [14]. According to Alexander [15,16] fidelity has dimensions beyond the visual design of a game. Notions of simulation fidelity include physical, functional and psychological fidelity [15].

Traditionally, the assumption has been that higher-fidelity is better than lower-fidelity, which in the case of simulations might be true. High-fidelity environments can provide an authentic context in which learners can learn-by-doing. This makes knowledge more meaningful and therefore has a higher

impact on the transferred skill or knowledge [17]. This paper, however, makes a clear distinction between realisticness and realism. Where realisticness deals with the degree of real-world similarity, realism can be found in conceptual continuity, in the game's ability to correspond its serious con-

Figure 1. Shows a simulation game seeking common stimulus properties, using literal transfer for learning.



tent with the realities of life [18]. One could argue that realism correlates with artifact acceptance and credibility, underpinned by the congruence of the three types of fidelity.

Game Transfer Model

The game transfer model (GTM) combines transfer and video game instances, suggest-

ing a space where it is possible to position educational content on a scale between literal and figural transfer. On the top of the model, the literal transfer corresponds with simulation, at the bottom figural transfer is connected to play. Depending on the desired educational outcome and profile of the learner, a sound judgment has to be made on "the what and the how" of transfer. Almost by default, and possibly influenced by the serious

part of serious games, serious games mostly can be positioned in the upper regions of the model. Introducing figural transfer in the design of serious games hands the education- alist tools to explore new (or forgotten) ways to get serious content across and enables game designers to integrate serious content in more playful ways in games as depicted in figure 2. The conceptual continuity circle lowers in the model towards figural transfer,

causing the serious content to take on different appearances. The shift from simulation to play initiates the need for a metaphorical approach recontextualization within the GTM the process of recontextualizing abstrac- tions into meaningful game-play is called metaphorical recontextualization. In order to facilitate figural transfer authentic elements of the learning objectives are presented in a metaphorical context. Players are presented

Figure 2. Shows a game artifact, facilitating figural transfer for learning by using metaphorical recontextualization.

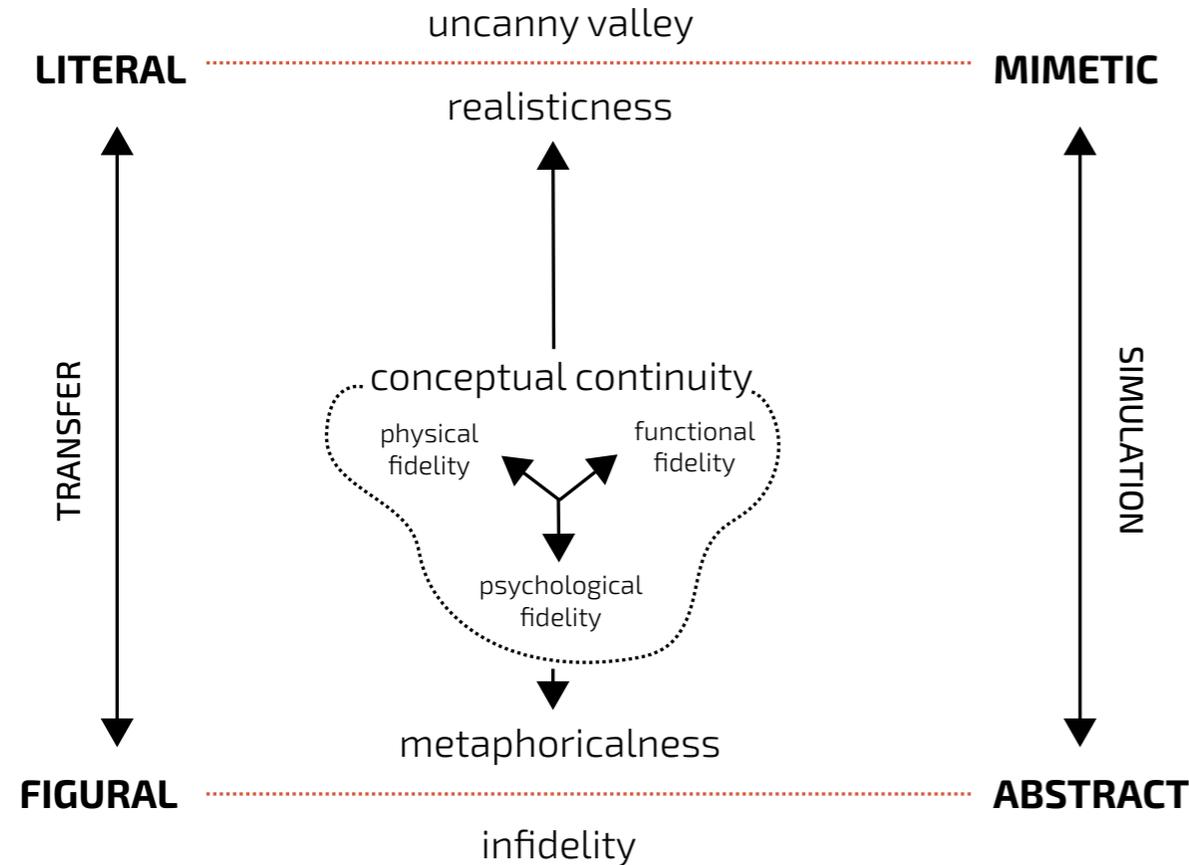
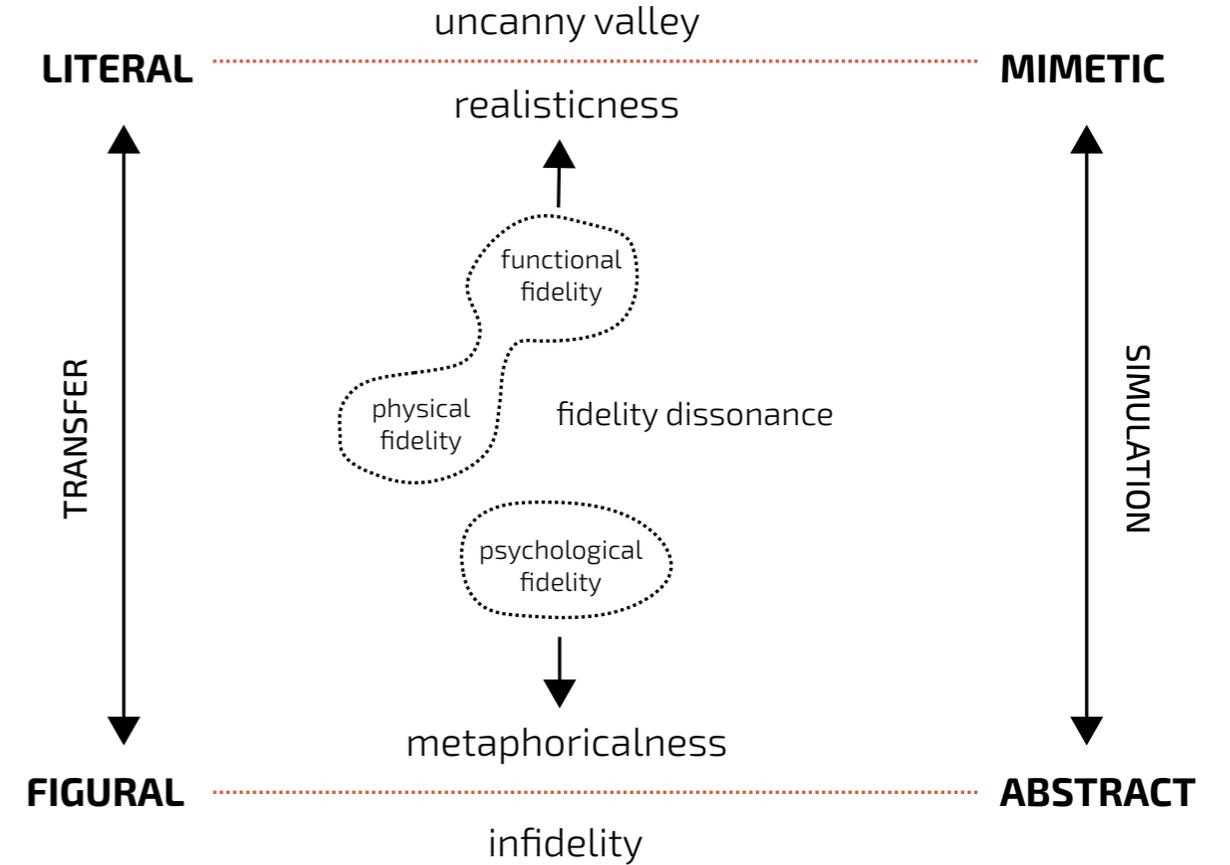


Figure 3. Shows the occurrence of fidelity dissonance, caused by incongruence in fidelity-types.



serious matter in new and rich contexts, triggering a need for understanding, generating meaning and encouraging participation. This process where players are making sense of contexts within they function by constructing mental representations or concepts of them shows resemblance with Argyris' theory on double-loop learning [19].

Recognizing and evaluating abstracted essentials in a metaphorical recontextualized environment is key to figural transfer. The use of metaphors is a known didactic principle, probably as old as humanity itself. The Greek word μεταφορά (metaphorá) actually means 'to carry over' or 'to transfer'. Figural transfer uses simile or metaphors as a carrier to create and raise mental images, allowing new insights and knowledge to land in prior schemata. In-game learning can occur by figural transfer using metaphorical recontextualization as a key element for success in learning and gameplay. When creating a game the use of metaphors is common practice to distance yourself from reality. A metaphorical recontextualization constitutes using a metaphor to place a real-life/simulated skill or knowledge partitions and re-arrange the construct by the use of a metaphor. This re-arrangement process through the use of a metaphor influences the constructs' qualities, the games' validity, and fidelity

as well as the overall player experience. Therefore when distancing oneself from a simulation towards a serious game designing the befitting metaphor is essential. When designing a game with transfer purposes, whether it is a simulation or serious game, conceptual continuity is key. The dimensions of fidelity can differ in their respective levels as well as their position on the grid of the game transfer model, however, the continuity of those levels through the gameplay influences the conceptual continuity. During gameplay, movement in the levels of fidelity or their position related to each other can vary to some extent, but more rigid movements on the grid of the game transfer model cause the conceptual continuity to fall apart. Figure 3 shows the occurrence of what in the GTM is called fidelity dissonance: an incongruence in fidelity concepts, causing a disturbance in the game experience. It's this pitfall in serious game design that contributes to the absence of suspension of disbelief and makes it hard to stay in the flow channel [20]. Finally, the endpoints of the scale are labeled uncanny valley [21] and infidelity. The uncanny valley describes the phenomenon of experienced uncanniness evoked by a high degree of fidelity. On the other hand, the term infidelity is used to describe a situation where fidelity is thus low, the game loses its potential for learning.

Conclusions & Implications for Game Design

Manifestations of mere learning can contribute to a fidelity dissonance, when implemented unaltered from existing work forms into gameplay. When designing a game for learning purposes, whether it being a simulation or serious game, conceptual continuity is key. Conceptual continuity can be reached by aligning the dimensions of fidelity in order to establish a sense of realism and believability. Serious game designers should reach their serious goals by focusing on transfer types and corresponding game entities. The combination of learning abilities of the target audience desired learning outcomes and content specifications result in a position on the grid of the game transfer model. This position marks the center of the conceptual continuity circle and positions the fidelity types. The dimensions of fidelity can differ in their respective levels as well as their position on the grid of the game transfer model, however the congruence of those levels through the gameplay influences the conceptual continuity. Whenever these points show incongruence, a fidelity dissonance may occur,

resulting in a game that's unable to get hold of the player in terms of flow and motivation. In simulation games this conceptual continuity is reached by creating a high fidelity and realistic environment, whilst in serious games, the metaphorical recontextualization is used to keep conceptual continuity and realism within a less realistic game environment.

This also implies that by default games that are using a reinforcement or motivational paradigm [22] within serious games lack conceptual continuity. When the game-goals and educational goals fail to intertwine, fidelity dissonance is a direct result. Therefore a blended paradigm is the more befitting paradigm for meaningful play. By exploring and embracing figural transfer as a mechanism for learning, serious games can be more than simulations or drill & practice games. Metaphorical recontextualization can be key to change the future of serious games, giving the education professional as well as the game designers new tools to develop seriously good games.

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