Transformational Play: Pedagogy for the 21st Century

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The advancements of technology are rapidly transforming all aspects of the way we live our lives, stimulating global change, positioning individuals in powerful roles, and connecting people all over the world. At the same time, schools have largely remained unaffected by these changes; most schools look alarmingly similar to schools 20 if not 100 years ago. Classroom instruction is grounded in the underlying cultural logic of “print-based” literacies and pedagogies, whereby an outside expert controls the content to be learned, and the focus is on content transmission. Additionally, it has become all too common to develop curricula and teach disciplinary content abstracted from those situations in which that content has meaning. This might be acceptable if schools were successfully supporting youth in learning academic content using that content to accomplish personally meaningful goals. However, research continually shows that academic engagement steadily decline from grades 4-9, and that in some cities dropout rates are as high as 50%. We desperately need new models of curriculum that provide teachers and their students with learning opportunities that are personally engaging, socially significant, and conceptually useful to our world’s future.

Unless we begin to engage youth in rich situations that add meaning to disciplinary concepts—as part of the learning process—the content of schools will be a perceived as a thing to be acquired and exchanged for a test score (having exchange value) and not a useful tool that has direct functional value in the world or to the learner. Toward building a new vision of teaching and learning for the 21st Century, in this manuscript we discuss our work designing and successfully scaling a game-based curriculum that positions children, content, and context in ways that we argue are personally empowering, conceptually meaningful, and situationally consequential. Combining strategies used in the videogame industry with lessons from educational research on learning and motivation, our work has explored how to build powerful learning curricula for teachers and their students. Unlike most other forms of curricula, the games we design offer worlds in which learners become central, important participants; a place where the actions of a ten-year old can have significant impact on the world; a context in which what you know is directly related to what you are able to do and, ultimately, who you become.

We believe that the power of these technologies lies not in the potential to make learning more efficient, but rather more personally meaningful by providing immersive situations that allow learners to adopt roles previously inaccessible to them. If properly designed, these immersive worlds can frame meaningful problems to be solved, and provide tools, experiences, perspectives, and consequences that, taken together, significantly increase the likelihood that the player will
develop rich content understanding. This is because a player is not simply learning content for its exchange value, but rather, considering what the content means through its application, thereby developing both a deeper understanding of the meaning of the content, and also a profound appreciation of its usefulness (its use value). It is in this way that, we argue, games support a unity of person, content, and context in which all are transformed through participation. This sort of consequential engagement is very difficult to accomplish in schools and even in non-interactive media; teachers can describe a situation, share a book, or even show a movie, but doing so doesn’t create a context that establishes a setting that the learner can act upon (and change) in personally valued and socially significant ways.

The opportunity to have a personal, agentic, and consequential role in resolving a dilemma is a significant component of both content learning, and potentially, more enduring outcomes, such as identity or affiliation. Perhaps ironically, the “real” outcomes of these experiences are supported in large part because of the fictional nature of the game world, which, through its narrative, allows students to take on an active role of someone who can, and actually does, have noticeable impact on the world. These designs can support students in trying out possible selves and futures by projecting themselves into an external agent (an avatar) who can safely act in ways that might not be possible in the “real” world. Likewise, the freedom afforded by the fictional context allows the player to directly experience the consequences of the decisions that he or she makes, for example by traveling into the future to see the impact of their actions.

It is one thing to discuss the potential of videogames for supporting learning; it is quite another to design games that establish a rich learning opportunity for K-12 students in the context of schools and all the constraints they bring. Toward this end, we have developed design theory known as transformational play (Barab, Gresalfi, & Arici, 2009). Transformational play involves positioning students as change agents who must understand and enlist academic content in order to effectively transform problematic scenarios. Merely playing a game does not ensure that one is engaged in transformational play. Instead, students who play transformationally become protagonists who use the knowledge, skills, and concepts of the educational content to first make sense of a situation and then make choices that transform the play space—and themselves as they see how the space changed because of their own efforts. Transformational play is a theory meant to communicate the power of games for education, highlighting their potential to meaningfully position person with intentionality, content with legitimacy, and context with consequentiality. Rather than separate foci, a player experiences transformational play when each of these are providing meaningful feedback to the other. The goal is that the curriculum becomes less of an intervention on the player, and more of an invitation to take on a role in a fictional world where the resolution of a problem requires and legitimizes disciplinary content.
The core design challenge is to create a context that enlists the player in a dilemma that can only be resolved through the application of disciplinary content. From a game design perspective, this involves thinking deeply about why the disciplinary content is important in the real world, not how it might be presented on a standardized test. Once we identify situations and purposes for the disciplinary content to be learned, we then build the gaming scenario around that purpose—thereby, positioning content with legitimate value. From there, we focus specifically on the role of the player and create a game narrative that enlists the player with a meaningful role in solving the game world scenario, thus positioning the player to act with intentionality. An important consideration if the play is to be transformational is that the game world should change in response to the particular decisions the player makes, offering the player feedback about not just the accuracy of their thinking, but the potential unforeseen consequences of their decisions. In this way, the context of the game responds to player decisions, offering the player a sense of consequentiality. Importantly, when a gaming context supports acting with intention, it motivates a reason for being there, and helps to shape one’s attention to both the story and the conceptual tools that would be required to successfully engage that story. Likewise, the context of the game offers more than mere sugar coating of the content; it actually provides deeper understanding of the meaning of the content.

Grounded in this theory, we have successfully designed dozens of virtual worlds in which children are transformed into empowered scientists, doctors, reporters, and mathematicians who have to understand disciplinary content to accomplish desired ends. Beyond speculative application whose value is grounded in grades, the game worlds we develop are changed, for better or for worse, based on the depth of student understandings and resultant choices. This can involve becoming a scientist investigating why fish are dying in a virtual park, or an investigative reporter collecting data to justify an argument dividing a town, or a mathematician deciding which brand of bicycle is safer. This work has resulted in the design and research of dozens of game-based units that have been successfully used by over 75,000 middle-school children worldwide.

As an example of the ways that the virtual space responds to students’ actions, in the virtual park known as Taiga (science unit), the player is investigating why fish are dying. After collecting and analyzing data from multiple locations in the park, the player may argue that the reason fish are dying is because of the erosion caused by the logging activities, and suggest that the loggers be removed from the park. If this plan is implemented too completely, however, the park may become bankrupt and game characters they meet representing logging families may be quite upset. Or, in the language arts unit, if players fail to gain evidence in support of their thesis, the in-game reporter tool will not allow them to even submit an article. Instead, students are encouraged to collect more evidence or realign their evidence to better support their core thesis—with the tool providing a form of embedded assessment that they can use to keep testing new evidence that they match to their reasons in support of their thesis.

In addition to the in-game feedback and embedded assessments, we have integrated into our games a teacher toolkit, allowing teachers to gain information about student in-game choices,
as well as the ability to review submitted essays that have been uploaded. In the best cases, the teacher signs reviews as coming from appropriate in-game characters, thereby ensuring both narrative integrity and, through their critical feedback, conceptual quality. However, the successful implementation of these games requires professional development as we work with teachers to develop new practices that focus on supporting students in developing rich understandings and making conceptually informed decisions. We need to recognize that games, no matter how well designed, are not going to teach by themselves. Instead, we see games as part of a larger learning ecology that includes the teacher, the classroom, peers, cultural norms, testing expectations and even textbooks all designed to help the player develop level up on core content understandings.

In a similar vein, we see conceptual understanding as part of an ecology that includes the concept, the person, and the contexts in which they are relevant. Such positioning provides a powerful curricular alternative to the more isolated and abstract presentation of content as often occurs in classrooms. Our prior research and design work is just one example of a transformative movement that is using games to provide experiences to children in schools that involve using academic content to solve socially significant and personally relevant problems in which they are the protagonist who makes decisions and drives situational change. These experiences are designed to be conceptually illuminative, but also communicate to students that the world is actionable, that disciplinary knowledge can make these actions more consequentially productive, and that they are the type of person who can and has used disciplinary knowledge to make a difference. In this way, no child left behind is less about all youth having high-test scores and more about each child having an experience in schools using academic content to accomplish something situationally meaningful.

**Bios:**

Sasha Barab is a Professor in the Teachers College at Arizona State University. He also holds the Pinnacle West Presidential Chair and is a Founding Senior Scientist & Scholar of the Learning Sciences Institute. His research has resulted in numerous grants, dozens of articles, and multiple chapters in edited books, which investigate knowing and learning in its material, social, and cultural context. He develops sustainable interventions and theoretical ideas to support a more knowledgeable, compassionate, and committed citizenship.

Melissa Gresalfi is an Associate Professor at Vanderbilt University in the Learning Sciences. Her research considers cognition and social context by examining student learning as a function of participation in activity settings. Following a situative perspective on learning, she investigates how opportunities to learn get constructed in mathematics classrooms, and how, when, and why different students take up those opportunities.