Game Design and Their Toolkits as Vehicles for Expression

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As the technical requirements to produce games diminish, the idea of creating games is occurring to more and more people with more and more purposes in mind. We propose that game design experiences—made possible to an untrained many through toolkits like those mentioned above—are relevant to learners of all ages, and the products and practices of these activities can be positioned to take on more relevance in the world as part of the design of the educational programs that enact them. Like the creation of other forms of media, game design can be a path to agency, giving people new tools to communicate about and in their lives. The games they make might be capable of contributing to a wide set of situations in their lives. We should not only take from these toolkits the distilled, testable, STEM-justifiable competencies educators need for their various quotas and crusades, but see our use of them within educational situations as being inherently about enabling people with new ways to make meaning. This perspective has implications for the kinds of games we ask our students to make, the kinds of toolkits we make for them to use, who we include as learners of non-professional game design, and the other activities and experiences educators connect to game design. In particular we recommend more emphasis on the use of non-professional game designs than their inherent properties as games. To help illustrate this general thesis, in the following sections we will look at examples at increasing levels of detail within a given realm of purpose-driven game design, Augmented Reality (AR) games in relation to learning.

Augmented Reality Games and ARIS

Experiments with AR games in learning scenarios have until recently been rare because of their difficulty and expense to enact (Squire et al, 2007). Covering a proportion of the inherent possibilities of AR games for learning (Klopfer & Squire, 2004) by iteration of typical researcher-led experiments, let alone proper analysis or efficient scaling, seems infeasible. Although in theory AR has a general reach, in practice it has looked somewhat unlikely to reach the masses (Dunleavy et al, 2009). This is one of the problems that toolkits help solve. For the last several years, ARIS has made it possible for non-programmers to participate in the high tech space of AR games (Holden et al, 2013). Besides helping to define the AR genre, the diverse practices of ARIS users represents the significant interpretive flexibility of ARIS and AR games. Some look at it and see an engine for producing collective tours to elucidate historical happenings, others may see a way to investigate the invisible aspects of their communities today, while still others might see a prototyping tool for creating interactive exhibits in a science museum.

Local Games Lab ABQ - by Christopher Holden

ARIS has given me access to forms of experimentation I would not have been able to attain previously without a large grant and several well-trained employees. I use it as a tool for prototyping and production—creating games as classroom curricula for example—and I also try to make fun games others might enjoy, a somewhat more personal side to my learning about AR games. But ARIS has also enabled me to organize a broad range of AR game design and play activities among faculty and students at my university. Using Jim Mathews' (2010) design studio concept, I reorganized some of my teaching using AR games, and share it broadly with other informal learners (Holden, 2014). That these teachers and students also see something to be said with AR games—and that many have actually thought enough of these ideas to really run with them, far outpacing developments that I could have helped them to directly—is what makes AR game design feel like an area that is capable of generating its own meaning beyond the computational literacies obtained. I am especially emboldened by the way that engaging in game design activities has allowed myself and others to take on and share new roles within our school. Next, an undergraduate student describes her game design experiences within the Local Games Lab ABQ.

Quest for the Cities of Gold - by Gianna May

My experiences with game design began when I created a prototype game that combined my interests in local history, writing, and teaching. Based on this prototype and conversations with personnel at the Albuquerque Museum I made another game, *Quest for the Cities of Gold*, specifically tailored to the exhibit space at the museum that they might actually want to use to appeal to youth. I created an independent study with Dr. Holden to continue the work I had already been doing and recruited a small team. Together, we spent two months planning and creating the game until it was ready to be playtested by museum patrons. We were able to create a working version of the game and released it to the public during a Family Day event held at the museum (May, in press).

Starting as a total beginner, I was able to build a working prototype and learned a lot from the experience of creating a game for educational purposes. In my follow up, we were further able to pull the game out of its digital space (a virtual map on the screen) and bring it out onto the museum floor as well. I now have a clearer understanding of how games can enhance a museum experience (and how they can do so successfully) and the ways in which videogames can provide an immersive, educational experience unique to other learning methods. ARIS made it possible for a non-CS student such as myself to explore this field, which would have normally been unreachable.

Interpretive Flexibility as a Value

Interpretive flexibility (Kline & Pinch, 1996) is a key factor involved in successful strategies for transforming educational agendas and practices via learning technologies. It is how something like a game design toolkit can become more than a way to teach a concept and pass over into a tool for expression. But interpretive flexibility is not directly a feature of software. It is co-constructed between its users and its producers and is a feature of the ecosystem in which the toolkit finds use.

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