

## “Smarter Thinking and Trial and Error x 17” – Building Epistemological Presence in Game Spaces

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In looking at the impact games have on kids, there are a number of popularly held perspectives. Out of school, many see games as a frill – harmless, but needing to be closely managed, for example through limitations on screen time. Others see games as a potential menace that need to be controlled through careful consideration of ratings scales to preserve childhood innocence. Games in school are often monitored and measured for their educational outcomes. The goal here is to Raise Test Scores. Where the tasks are odious or dull, gamification through on screen rewards offers the potential of making the task palatable. The metaphor of “chocolate-covered broccoli” captures this nicely. For game design, the easy way out is to adopt a “curriculum in a box” teaching manual (e.g. Floor, 2013) which provides extensively pre-scripted game design processes, expect very little of the teacher, and leads to uniform, grade-able student outcomes. Whether the goal is playing or designing, we can do better. A critical step in this process is the careful architecture of the environment in which the game is played.

Whether pursued informally or in a structured environment, well-crafted game play and game design spaces can support important cognitive and non-cognitive skills. When this happens, there is a level of engagement that resonates with basic human needs, eliminating the need for artificial inducement and pre-scripted activities. Participation becomes organic and emergent. This is an ambitious claim, which I will support with philosophical and psychological frameworks populated with examples from my work over 18 years leading a regional math game involving more than 1,000 kids each year, and from more than a decade of game design camps which have involved more than 400 pre-teen designers. Methodologically, it is a process of phronetic social science, which Flyvbjerg et al (2012) describe as “field research that produces intimate knowledge of localized understandings of subjective human relationships, and especially in relationship to the values and interests that drive human relationships (p. 2).”

First, to lay out the philosophical groundwork. The goal is academically framed as *epistemological presence*, which Sockett (2012) defines as “an atmosphere in which the complexity of knowledge and the knower’s experience of it is constantly in play” (p. xii). Phrased differently, the environment is characterized jointly by the life of the mind engaged in active intellectual pursuits, and by a degree of moral agency as participants pursue individual growth and work toward building a community of inquiry. To that end, Sockett describes complementary agendas for public and private experience. Public, observable dimensions of a space with epistemological presence would include active engagement with issues of knowledge, truth, and belief. *What do we think? How do we know?* Private or personal dimensions would include opportunities for participants to build commitment, experience, and identity.

What would this look like in a game space? Imagine a gymnasium floor with 300 kids ages 8-13, grouped around tables in sets of five age-mates playing a local variant of Equations (Allen, 1963). To start, one of the kids rolls 20 cubes with numbers and operations on the faces. After the goal setter positions a few of the cubes on the board to set a numeric goal (say,  $7 + 4 \times 3$ ), each player in turn requires, permits, or forbids one of the cubes not yet played. Play continues, working toward the goal but with each player being careful not to make it impossible to reach the goal, or to make it possible to reach it on the next play. Each of these can be challenged as a “flub.” Instead, the challenge is to keep a mathematically viable solution possible until someone flubs. At that point the kids need to consider the situation, assess if a flub has happened, and assign points based on their collective judgment. Throughout, there is a deep appreciation of mathematics being built among the kids, growing out of their reflections on strategies, mathematical relationships, and the need both to assert one’s own solution and to evaluate those offered by others at the table. Each year more than 1,000 students across the St. Louis region prepare for months, meeting in school, after school, at the library, and even in mall food courts to prepare.

In a well crafted game design camp, kids likewise benefit from an environment filled with epistemological presence. As the young designers work on creating an engaging game structure, they wrestle with complex mathematical relationships underlying interactions on screen, and they engage in psychological projections as they seek to optimize the player experience. As with the Equations game just described, the net result is a much more intellectually and personally engaging space compared with either free play or a traditional school environment. As Ross, an 11-year old game designer, framed it, his experience at game design camps “is a lot different than school because it requires smarter thinking and trial and error x 17. In school you don’t get a second trial because when it’s done it’s done and that’s your grade.”

Complementing these public dimensions of game play and design, there is also a complex level of personal and social engagement that is nurtured in spaces where there is epistemological presence. Here, kids are challenged to sustain their commitment and draw the most from the experience, iteratively developing craftsmanship through their own efforts and from what they learn from their peers. In *Equations*, kids learn math principles from each other and add them to their repertoire as they build an identity as a mathematically capable person. Likewise, over the course of a week-long game design camp, it is routine for kids to embed strategies and techniques they have learned from observing what another designer has created. Whether a participant ever aspires to become a mathematician or game designer, there is a more important process of personal and social identity development at work. Throughout, there is a cultural norm reinforcing the idea that there are interesting problems ahead that I can set for myself, and if I work diligently I can succeed for myself and contribute to the group. The identity of being an autonomous learner and a creator is arguably not a priority in most formal learning environments, and collaboration is largely banned. Hence, the critical need for environments such as these which are imbued with epistemological presence, and which hold forth the potential for kids to think and act critically and creatively. As they do this, they both draw from and contribute to the social good.

The argument so far suggests that there are intellectual and personal benefits that emerge within a well crafted game space – benefits that schools aspire to achieve but rarely do. What is it about this space which fosters kids' growth but which requires no coercion or artificial inducements (the chocolate covered broccoli)? For this, we need to turn to Self Determination Theory (SDT), a framing offered by Deci and Ryan (2002) and extended by legions of other researchers., including some focusing specifically on the link between gaming and SDT (Rigby and Przybylsky, 2009). Self Determination Theory posits that people thrive if they are in spaces which foster autonomy, competence, and relatedness. In a well structured game space, there is a dynamic interplay of freedom to explore and investigate, framed by an intended outcome for which kids will be accountable – both to the group leaders and their peers. Through this process of setting goals, realizing incremental progress toward those goals, and sharing ideas and techniques with peers, participants have their needs for autonomy, competence, and relatedness addressed. Unlike school, where power is generally a one-directional effort toward enforcing compliance, a productive game space shares power among participants in an effort to nurture everyone's growth.

To summarize, play and design can be most meaningful within a space imbued with an epistemological presence. Ideas need to be aired, challenged, refined, and put into practice in an environment that supports sustained effort and which leads to personal and social development. Simply giving kids time to play — or even design their own games — is not enough. As architects of the learning space, we need to provide opportunities for participants to iteratively cycle through roles as teachers and learners.

## References

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The work described here was supported in part by National Science Foundation grants # 0639638, #0833663, and #1223407, and by the Litzsinger Road Ecology Foundation. The opinions expressed are those of the author and not necessarily those of the funders.