Game-based Learning and Intelligence Analysis: Current Trends and Future Prospects

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Eyes glazed, texting, fidgeting in their seats. For all too many educators, this is an increasingly common sight in classrooms. One promising solution to this problem, at least with respect to intelligence analysis, comes from the growing body of research into game-based learning.

Games have always taught, to a certain extent, many of the skills required of an intelligence analyst. Whether it is Benjamin Franklin's argument that chess teaches foresight, circumspection and caution, the Jewel Game played in Kipling's *Kim*, or the much more robust application of the difficulties presented by the fog of war in the most highly developed versions of Kriegspiel, games have always helped train intelligence professionals.

What has changed, however, is the advent of video games and their amazing ability to command the attention of the people playing them. Most people assume that this effect is limited to millennials and it is certainly true that this generation largely consists of avid gamers. According to the Pew Internet and American Life Project, 97% of teens age 12-17 play video games with 50% of them having played "yesterday" (Lenhart, et. al., 2010).

What is less well understood is that video games, particularly casual games such as *Farmville* and *Words with Friends*, have extended the reach of video games across both age ranges and gender. According to the Entertainment Software Association, the average age of the American gamer is now 30 with the number of gamers over 36 outnumbering the number below 18. In addition, according to the same survey, 45% of all gamers are women (Entertainment Software Association, 2013).

A broad appeal, across ages and genders, is not the only place where games seem to be different than other pedagogical approaches, however. Most educators, when they think of game-based learning, think about games designed to explicitly teach a topic, such as a children's video game designed to teach arithmetic. More interesting, perhaps to the intelligence classroom, is games' ability to teach implicitly — to teach without teaching.

One of the most important skills a game player quickly learns by playing is the ability to identify deep patterns in disparate sets of data. Much of an analyst's life is spent in trying to understand systems of one kind or another: political, economic, military, social, cultural or the connections between them all. This kind of higher order thinking is precisely the kind of strategic and metacognitive thinking most relevant to the work of an intelligence analyst.

Playing a wide variety of games, when engaged in voluntarily, has the ability to train skills and impart knowledge without the participant being aware that he or she is learning. This type of learning, though difficult to measure, is exactly the kind of pedagogical innovation the modern-day classroom demands.

A recent study found that "extensive experience with music or video games is associated with enhanced implicit learning of sequential regularities" (Bergstrom et al 2011). The findings of recent studies suggest that people with gaming experience are unequivocally better at deep pattern recognition, an ability they did not derive from reading books on games; rather, by *playing* games.

The games-based approach has recently captured the attention of the United States Intelligence Advanced Research Projects Activity (IARPA), who launched the SIRIUS program in an effort to utilize so-called "serious games" to "to train participants and measure their proficiency in recognizing and mitigating the cognitive biases that commonly affect all types of intelligence analysis." The SIRIUS project is a 5-team initiative aimed at determining what game mechanics are best suited for teaching the recognition and mitigation of certain cognitive biases for intelligence analysts. While results of the effort are still preliminary, they are promising.

Projects such as these are an inspiration to games-based approaches across the board. For example, we have developed a game called The Mind's Lie to attempt to implement some of the same approaches as the SIRIUS program using a collaborative, scenario-based card game. The Mind's Lie invokes pedagogical strategies such as peer-learning and practice at retrieval to train intelligence analysts to recognize and mitigate six cognitive biases.

Peer-learning is a very familiar approach with two components that collectively contribute to its success: "Learning by doing" and "learning by teaching" (Topping 2005). Learning by doing effectively pushes a student past knowledge of theory towards the ability to implement transferrable skills. The value in this approach is real-world applicability versus textbook knowledge, which is the most important learning outcome for the intelligence community. Learning by teaching, on the other hand, is "learning twice" (Topping 2005). It provides a more robust understanding of the subject matter through the process of breaking it down into accessible parts for a less-adept audience. This approach leaves the learner with a deep understanding of the mechanical underpinnings of a concept, rather than broader, less applicable conceptual knowledge.

Games also excel at what has been called "the single most important variable in promoting long term retention and transfer": Practice at retrieval (Halpern and Hackel, 2003). Games require players to constantly recall details, strategies and patterns from memory, ensuring that this recall becomes easier over time.

Though literature supporting a games-based approach to teaching intelligence analysis is scattered, it is supportive. Prior research on games-based learning demonstrates that games both "increase retention of subject material" and "improve reasoning skills in higher order thinking" (Hogle 1996). As one of the current authors found regarding a games-based approach to teaching strategic intelligence:

*"*Games- based learning appears to have increased intelligence students capacity for sensemaking, to have improved the results of their intelligence analysis and to allow the lessons learned to persist and even encourage new exploration of strategic topics months after the course has ended*"* (Wheaton 2010).

So if games-based learning is so effective, why isn't it the standard in every classroom?

The first (and probably the most notable) caveat is that while performance on course projects with Wheaton's strategic intelligence class dramatically increased over a period of years subsequent to the addition of a comprehensive game-based learning approach, student satisfaction with the course steadily (though modestly) declined (Wheaton 2010). This result is counterintuitive and contrary to virtually all of the hype surrounding game-based pedagogy but something about the robust games-based approach made students feel less satisfied with the overall academic experience.

One possible explanation for this is the implicit nature of this particular games-based approach; students could not arguably attest to the benefit tabletop games contributed to their educational experience, and therefore did not rate the experience as highly. Another explanation for this effect is that this game-based classroom was much more challenging than the familiarity of lectures and tests. As research has shown, "engaging in such situations may be less enjoyable for students and lead to lower student ratings of their instructors" (Halpern and Hackel, 2003).

A second issue with the games-based approach is the variety of games that exist, each one with distinct benefits and drawbacks, each one with distinct appeal. The degree to which a games-based approach is successful is almost exclusively dependent on the player reaching what Mihaly Csikszentmihalyi labels the "flow state" (Chen 2007). The ideal flow zone provides a balance between the player's abilities and the challenge the game presents. Too much

challenge, and the player will find themselves in a state of anxiety. Too little challenge, and the player will be bored. In either scenario, the player is unlikely to learn.

This flow zone occurs at different places in each game for each player. Additionally, not every student is going to like every game. For example, a game employing a strong argumentation mechanic would likely not attract an introverted student. The problem this poses for games-based pedagogy is that in order to teach a classroom full of students, you need a classroom full of games that a) address a variety of topics and b) employ a variety of game mechanics, such that there would be something for everyone.

Ultimately, games-based learning is a unique approach to knowledge transfer. If there is one aphorism to which the majority of educators might subscribe, it would be that attention is the currency of learning. Attention, in the modern-day classroom, is an increasingly difficult thing to capture. Games accomplish this goal.

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