By Jonathan A. Bower

Entertainment vs. Education

Americans, and many others around the world, live in a highly stimulating entertainment environment. Television, video games, phone apps and a myriad of web sites offer highly engaging entertainment experiences at any time, in just about any place. In order to compete for attention, many educators and education software developers argue that learning experiences need to be given the style, pace and scoring systems of games, to be "gamified," in order to engage learners and provide effective learning experiences. Yet, research contradicts their assumption.

Humans are natural learners. The brain secretes Dopamine in its reward centers in response to a successful learning experience demonstrated by performance[1]. First graders successfully reading new words and golfers who learn to hit straighter down the fairway both experience real pleasure from their achievements. They do not need animated figures to congratulate them, rapid-fire editing to keep them involved or good scores to tell them they succeeded. Performing a learned skill generated the pleasure by itself.

Even more important to learning, the gamification of learning activities actually reduces learning; reducing the value and the pleasure that learners receive from their use. Research by Michelle Donnelly in 2006[2] found that students who heard stories read out loud were 2.5 times more likely to remember their content than students who experienced them in animated interactive applications. Writing about the study, Iain Thomson noted that "pupils who use interactive software cannot remember the stories they have just experienced because they are distracted by cartoons and sound effects."[3] Similarly, Hongpaisanwiwat and Lewis reported in 2003 that animated characters had zero or negative impact on recall depending on whether a human or animatronic voice was used[4]. Many other studies[5] have shown the same: the more multimedia effects are included in learning activities, the less learning takes place due to both time wasted and distraction from the learning task.

Effective instructional software implements this research by limiting animation to answers moving into position for selection by learners, and by limiting sound effects to direct positive and neutral (for errors) feedback. Students choose the backgrounds they prefer from complex themes or simple colors depending on their ability to concentrate and their propensity for boredom. Learners focus on the content; tracking their progress through reports. Teachers can also access these reports to provide additional feedback and direction to learners, but the primary value is in informing students directly[6]. That is probably the only area where gamification is appropriate for learning: more learning takes place when students receive direct feedback on their performance than if they receive it from a third party.

In sum, well designed educational software activities provide engagement through learning rather than through entertainment, effectively motivating students to succeed.

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1 *The Compass of Pleasure: How Our Brains Make Fatty Foods, Orgasm, Exercise, Marijuana, Generosity, Vodka, Learning, and Gambling Feel So Good*.
David J. Linden Penguin, Apr 14, 2011

2 Education 3 to 13

3 Iain Thomson, vnunet.com 10 Jan 2006

4 *Attentional Effect of Animated Character. Human-computer Interaction*, INTERACT '03: IFIP TC13 International Conference. Cholyeun Hongpaisanwiwat & Michael
Lewis (2003)

5 Christensen & Gerber (1990), Boyce & Assad (1990), Tversky, Morrison & Betrancourt (2002), Rieber, Baylor, Ryu & Shen (2003), Large,
Beheshti, Breuleux & Renaud (2003), De Jong & Bus (2004), Lowe, R.K. (2004), Sung-il Kim (2007)

6 Hattie, John. *Visible Learning: a Synthesis of Meta-Analyses Relating to Achievement*, 2009, Pgs. 48 & 225

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