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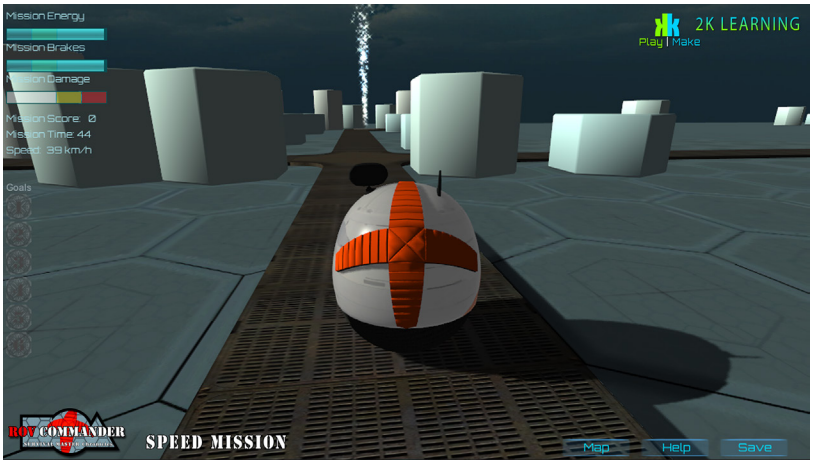
Karl M. Kapp

Maria, an eighth-grade student, arrives to science class early, walks over to a cabinet, and chooses a tablet computer. She then sits down quietly and begins learning with the tablet. Other students slowly file in and do the same. Maria is learning about velocity as part of a unit introduced by her teacher last week. After Maria's teacher introduced the concept of velocity and how it is calculated, he assigned a learning game to reinforce what he had taught, and that is what Maria and her classmates are engaged in now.

Maria looks over and waves to her friend Juan who has just retrieved his tablet from the cabinet. Today, the first thing Maria does is choose a level. She is feeling smug but not super smart, so she decides to play Level 1 over again before proceeding to the newly unlocked and substantially more difficult Level 2. After quickly playing the first level of the game again and only having to start over once, losing only a couple of points, she proceeds to Level 2 and its terminal learning objective related to the calculation of velocity. Of course, to Maria, it's not a "terminal learning objective"; rather, it's the next level of the ROV Commander game she's been playing for the past few days (Figure 1).

Figure 1. The ROV Commander Screenshot



In the game, she is the "commander" of a remotely operated vehicle (ROV). The ROV looks like a sphere with an antenna on top. Maria's challenge is to maneuver the ROV through an obstacle course without running into anything. Her goals are to find a half dozen "hidden" waypoints and to accurately record information about distance, time, and rate and then make calculations based on the recorded information (see Figure 2). The waypoints aren't really hidden, and if she records information and performs her calculations properly, she can find them quickly. Maria maneuvers the ROV within the confines of the game's landscape and then records data for each waypoint she locates. With the recorded data, the game can "check" to see that Maria is performing the velocity calculations correctly. If she is not, the game provides corrective feedback, and Maria must recalculate the data for the waypoint. If she does hit an obstacle, the ROV loses speed and energy points. These are both undesirable outcomes to Maria, who is striving to be the first student in her class to get to Level 3 and win the game. If she loses speed, she can't get to the next level as quickly; if she sustains too much damage, her ROV will need to start over. Maria has heard that Level 3 is "cool," that the ROV uses boosters to fly. She wants to check that out, but first she will have to do some calculations. Unknown to Maria, but part of why her teacher has chosen ROV Commander as a learning game, is that each level introduces a new concept. This structure provides a scaffolded approach to content enabling Maria and her classmates to progress in both the knowledge and application of formulas for average velocity, final velocity, distance traveled, and acceleration.

Finally, Maria completes her last calculation and finds the last waypoint. She is pleased and lets out a screech. As she reflects on finding this last waypoint, it occurs to her that Juan must have missed it. Otherwise, he wouldn't be stuck driving around the ROV on Level 2, which is where he started today. Maria suspects it might be because he needs to spend some time calculating distances or travel time from one waypoint to another. Maria mentally makes a note to herself to give Juan a hint of where to look for the last waypoint. But that will have to wait, because Maria wants to make it to Level 3 and win the game before Juan does. She is feeling confident that today is the day she'll make it and win the game.

Figure 2. Calculating Speed With Distance and Time

For decades, educators have been forced to choose between providing each student with personalized instruction or covering required state or locally mandated content. In many cases, the need to cover required content trumped the idea of providing personalized learning for each student. Given those requirements and typical class sizes, it has been impossible to personalize curriculum delivery, pacing, and level of difficulty for each student.

As Maria's game-playing experience indicates, game-based learning provides several advantages over traditional teacher-led instruction—that is, lecture-based instruction with uniform content delivered to all the students at the same pace, with little time for student reflection or self-direction. Game-based learning, on the other hand, enables each student to have a personalized learning experience with the same content at his or her own pace. Students can review content if they wish, speed ahead, experiment, and experience the game differently than fellow students and still reach the same learning outcomes. In addition to individualized pacing, games provide for a student to progress in different ways through the game, reviewing levels or content by replaying a level, and making new choices that impact the outcome of the game (Kapp, 2012). Games can instantly provide feedback and help when needed without the student raising his or her hand or interrupting the teacher who is helping another student.

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Well-designed game-based learning provides levels of personalization that "scaffold each student's learning and foster self-direction to help each individual achieve mastery of knowledge and skills" (Redding, 2014, p. 6) Although a similar experience could be had in many classrooms with nondigital interventions, many constraints preclude the use of those interventions in achieving personalized learning. Aspects of nondigital strategies—such as paper-based programmed instruction and personalized tutoring by the teacher providing carefully scaffolded lessons based on each student's past performance and rate of understanding—conflict with basic instructional limitations, including the available time and materials and maintaining good classroom management.

Digital games, then, offer an ideal tool for delivering what the U.S. Department of Education defines as personalized learning, which is "instruction that is paced to learning needs (i.e., individualized), tailored to learning preferences (i.e., differentiated), and tailored to the specific interests of different learners" (2010, p. 12). Games offer many of the elements of personalization as well as the ability to provide personalized instruction on a scalable level. A teacher can provide all 30 students in her classroom with a tablet, and each can then begin engaging in personalized learning (Guillén-Nieto & Aleson-Carbonell, 2012).

Although all of these features of game-based learning reflect advantages associated with personalized learning, research comparing game-based learning with traditional classroom instruction has not consistently shown one method to be superior to the other. Game-based research for education is "vast but not conclusive" (Schifter, 2013, p. 149).

Game-based research has been centered on comparison-based studies and discussions of which is better, traditional instruction or game-based learning (Kapp, 2013; Liao, 2010; Randel, Morris, Wetzel, & Whitehill, 1992; Sigurdardottir, 2012). There has not

been a conclusive answer to this question. In some studies, games have proven more effective than traditional teacher-led instruction, and, in some cases, they have not. The lack of a definite winner between games and traditional instruction has led to confusion about the effective use of games in the classroom among policymakers, administrators, teachers, and parents, who have little practical or actionable advice to guide them. It has even caused some to ask, "Are games effective for teaching at all?" (Clark, 2013).

The answer to that question is a resounding "yes." Evidence strongly supports the conclusion that games are capable of being effective and efficient tools for teaching—students can and do learn from games (Hays, 2005; Ke, 2009; Randel et al., 1992; Schifter, 2013; Sitzmann, 2011; Vogel et al., 2006; Wolfe, 1997; Wouters, van Nimwegen, van Oostendorp, & van der Spek, 2013).

So the question should not be "Are games capable of teaching?" because they are. Instead, stakeholders should be asking several other questions: "What features of games lead to learning and when?" "What classroom conditions support using games?" "How should a game be integrated into the classroom to ensure positive learning outcomes?" To answer these questions, we need to delve into the rich history of game research and not look only at the comparison with other types of instruction but also review the studies which determine what elements were present in the game or classroom condition when the games led to positive learning outcomes. We need to divine what game elements lead to learning and ensure that we leverage those elements when creating, purchasing, and integrating instructional games into the classroom.

New Research Initiatives

Based on the past 40 years of games studies, a large body of research is available to draw evidence-based conclusions about when, why, and how to use games in the classroom (Hays, 2005; Ke, 2009; Randel et al., 1992; Schifter, 2013; Sitzmann, 2011; Vogel et al., 2006; Wolfe, 1997; Wouters et al., 2013). Guidelines can now be offered concerning how to successfully integrate games into K–12 curriculum to provide scalable, personalized learning opportunities for students and to engage them one-on-one with the content at their own pace and with built-in scaffolding. We can now identify the type of game elements that lead to learning. Several such guidelines are presented in this chapter.

Guidelines for Effectively Integrating Games Into the Classroom

A number of meta-analyses of studies of game-based learning have attempted to develop generalizable findings that can be used to select and create educational and instructional games (Hays, 2005; Ke, 2009; Sitzmann, 2011; Vogel et al., 2006; Wolfe, 1997; Wouters et al., 2013). Some of those findings are presented in this chapter as guidelines for using games in the classroom. The guidelines will allow state education agencies (SEAs), local education agencies (LEAs), and individual classroom instructors to make informed decisions about when and how to incorporate game-based learning into the classroom to achieve maximum learning outcomes. Recommendations based on the game-based learning literature follow.

Games should be embedded in instructional programs. The best learning outcomes from using a game in the classroom occur when a three-step embedding process is followed. The teacher should first introduce the game and explain its learning objectives to the students. Then the students play the game. Finally, after the game is played, the

teacher and students should debrief one another on what was learned and how the events of the game support the instructional objectives. This process helps ensure that learning occurs from playing the game (Hays, 2005; Sitzmann, 2011).

In Maria's case, before the students began playing ROV Commander, they had several lessons outlining content, objectives, and what they would be encountering within the game. That instruction helped Maria apply new learning to the game condition. After the game was played, Maria's teacher debriefed the students and had them reflect on what they learned about rate, time, and distance—learning which included the formulas used to calculate the values of velocity and acceleration. In fact, the ROV game has a built-in feature in which students describe in a paragraph what they learned. This descriptive exercise provides the students a chance to reflect individually before sharing their reflections with the class.

Ensure game objectives align with curriculum objectives. Ke (2009) found that the learning outcomes achieved through computer games depend largely on how educators align learning (i.e., learning subject areas and learning purposes), learner characteristics, and game-based pedagogy with the design of an instructional game. In other words, if the game objectives match the curriculum objectives, disjunctions are avoided between the game design and curricular goals (Schifter, 2013). The more closely aligned curriculum goals and game goals are, the more likely the learning outcomes of the game will match the desired learning outcomes of the student.

Teachers do not have time to vet all games and determine the learning outcomes.

The obligation to align the outcome of the learning games with learning objectives is ultimately the teacher's responsibility but can be aided by the creators of the games and the game vendors, who need to provide transparent explanations of the instructional goals of the games. The process should also be aided by LEAs and SEAs, who need to screen, validate, and confirm which games are aligned with the recommended or required curriculum and which games are not. Conducting a comparison of game outcomes with educational standards can be one method of helping to ensure alignment of game outcomes with desired curriculum outcomes. Teachers do not have time to vet all games and determine the learning outcomes. This information needs to be readily available from vendors or educational agencies that have undertaken a vetting process. While some vetting sites are available (for examples, see Mahon, 2014), they are not well known or circulated among teachers or administrators.

For example, in the ROV Commander game played by Maria, the vendor of the game specifically aligned the game outcomes with both the Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS) and clearly spelled out what standards are being met through the game play. It may then fall on the shoulders of the teacher or the LEA or SEA to determine how the game may best support curricular outcomes reflecting CCSS and NGSS.

Games need to include instructional support. In games without instructional support such as elaborative feedback, pedagogical agents, and multimodal information presentations (Hays, 2005; Ke, 2009; Wouters et al., 2013), students tend to learn how to play the game rather than learn domain-specific knowledge embedded in the game. Instructional

support that helps learners understand how to use the game increases the effectiveness of the game by enabling learners to focus on its content rather than its operational rules.

Embedded instructional support also allows personalization of learning, enabling students to explore in greater detail a game's instructional content by providing content, either remedial or supplementary deeper explanations or related topics, when a student wants to know more. Alternatively, the instructional support can be aimed toward remediation or scaffolding and can be triggered by the game itself if students suddenly encounter difficulty because they do not understand the content or some formal element of the game. Embedded instructional support provides the gamers immediate guidance when their game action triggers it.

In the ROV Commander game played by Maria and Juan, when Juan became stuck and unable to find a waypoint, the game provided hints. Juan, or any student, can choose to accept a hint and read information that will point toward solving the problem. The hint system provides progressively more revealing hints if Juan does not figure out how to solve a problem after the first hint, or Juan can ignore the hints altogether. The "hints" are actually instructional support elements presented as text-based information that explain rate, time, and distance in varying levels of detail.

Games should be highly interactive. Games are more effective for learning when they actively engage students in learning the course material as opposed to passively conveying content, such as presenting videos (Sitzmann, 2011; Wouters et al., 2013). The relationship between a student's "choice and system's response is one way to characterize the depth and quality of interaction" (Salen & Zimmerman, 2004, p. 61). In the ROV Commander module, Maria needs to make choices about what course of action to pursue. Even Maria's choice of whether or not to accept hints allows her to make decisions that directly impact her playing of the game and how the game reacts.

Games do not need to be perceived as being "entertaining" to be educationally effective. Although we may hope that Maria finds the game entertaining, research indicates that a student does not need to perceive a game as entertaining to receive learning benefits. In a meta-analysis of 65 game studies, Sitzmann (2011) found that, although "most simulation game models and review articles propose that the entertainment value of the instruction is a key feature that influences instructional effectiveness, entertainment is not a prerequisite for learning" (p. 515), and entertainment value did not impact learning (see also Garris, Ahlers, & Driskell, 2002; Tennyson & Jorczak, 2008; Wilson et al., 2009). Furthermore, what is entertaining to one student may not be entertaining to another. The fundamental criterion in selecting or creating a game should be the learner's active engagement with the content rather than simply being entertained (Dondling, 2007; Sitzmann, 2011).

Therefore, even if a student is not entertained by a game, high interactivity—an extremely important component of learning—will most likely ensure academic progress (Freeman et al., 2014). Thus, the selection process should emphasize what really counts: meaningful interactivity that promotes learning. However, as with many researched elements in the field of education, interactivity does not ensure learning; it just makes learning more likely to occur.

Provide unlimited access to the game and encourage playing the game multiple times. Sitzmann (2011) found that learners in a game group with unlimited access to the

game outperformed a comparison group with limited access. Additionally, Wouters et al. (2013) found that the positive effect of multiple sessions on learning is larger for games than for conventional instruction methods. Learning benefits thus occur when students choose to freely and repeatedly engage in game play (Sitzmann, 2011; Wouters et al., 2013), a repetition that promotes mastery of the skills being taught (Sitzmann, 2011).

Wouters et al. (2013) postulate that one reason for this positive effect of multiple game sessions is the learner's growing familiarity with the game's complex learning environment. One student may want to play a game only twice, and another may want to play every chance he or she can. Such is the nature of games. Providing an electronic game or even a card or board game to students whenever they have some free time—both in and outside of the classroom—gives them an opportunity to play the game multiple times, which has the potential of improving their learning because they will tend to focus more on the features related to learning outcomes rather than the game's mechanics, structure, and rules.

Gamification for Learning

The recent emphasis, discussed previously in this chapter, on determining the most effective elements and features of games for learning has, in part, led to the concept of gamification. The term "gamification" is relatively new. The first documented print appearance of the word was in 2008, and the term did not gain widespread recognition or use until late 2010 (Deterding, Khaled, Nacke, & Dixon, 2011; Groh, 2012; Werbach & Hunter, 2012). The term "gamification" captures the idea that certain elements of games can be infused into instructional situations to provide a positive learning outcome without having to create a full-blown learning game.

Gamification has been defined as the "process of using game thinking and mechanics to engage audiences and solve problems" (Zichermann, 2010), "using game techniques to make activities more engaging and fun" (Kim, 2011), and "the use of game design elements in nongame contexts" (Deterding et al., 2011, p. 1). From an instructional context, the most relevant definition is one that combines elements from these definitions and defines gamification as "using game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012, p. 10). "Gamification" is a broad term that can be further refined into two types—structural gamification and content gamification.

Structural Gamification

"Structural gamification is the application of game elements to propel a learner through content with no alteration or changes to the content" (Kapp, Blair, & Mesch, 2013, p. 224). The content does not become game-like; only the structure around the content does. A common implementation of this type of gamification adopts the scoring elements of video games, such as points, levels, badges, leaderboards, and achievements and applies them to an educational context (Nicholson, 2012).

Structural gamification's continual, real-time assessment of progress provides important information to both the student and the teacher as students complete portions of content, take quizzes to gauge knowledge acquisition, and move toward the prescribed educational goals. The continual assessment of progress helps identify students' strengths and weaknesses. For example, a teacher employs structural gamification when he or she assigns

students content to be learned through a daily quiz-type game for two weeks via email or a mobile app. If the students answer correctly, they earn points and progress toward earning a digital badge. If the students answer incorrectly, they are immediately presented with a short instructional piece specifically addressing the question's topic. Questions are repeated at various intervals until the student demonstrates mastery of the topic. The quiz and instruction process takes 30 to 90 seconds each day, at either the beginning or end of the day based on the choice of the student. As the students progress through the content, the number of questions they have answered correctly is indicated on a leaderboard for the entire class to view, enabling students to assess their progress relative to others, or the score can be grouped by teams to allow team-based learning. Although, as noted below, the focus should not be on comparing oneself to other students but rather on assessing one's own performance.

Content Gamification

"Content gamification is the application of game elements, game mechanics, and game thinking to alter content to make it more game-like" (Kapp et al., 2013, p. 237). A common implementation of this type of gamification adds elements—such as story, mystery, and characters—to content to engage the learner. For example, content gamification could be realized by embedding a series of math problems in a fantasy narrative or by starting a classroom dialogue with a verbal challenge instead of a list of objectives. All of these added attributes positively influence a student's emotional state and generally enhance motivation and facilitate learning and performance (American Psychological Association Work Group of the Board of Educational Affairs, 1997).

New Affordances

The fundamental elements of the two types of gamification, structural or content, are not new to instruction. For example, students commonly earn "points" for spelling words correctly on a spelling test or lose points for not showing all work on a math problem. While not traditionally called "gamification," the exchange of performance for points or an award can certainly be classified as a game-like element. Points are not a "natural" part of learning; they are added to the learning of how to spell a word as a method of motivation and assessment. Points are used to measure learner progress on tests and homework just as points are used to measure progress in games. Points are typically accumulated over a semester, and if the student has enough points, he or she earns a badge in the form of a letter grade. Students move up from one grade level to another grade level. Similarly, challenges, stories, and mysteries are routinely used by many teachers to engage students and provoke their thinking. While teachers and students many not view school as a "game," it turns out that schools appropriate many elements from games in their structure and approach to teaching.

Technology can present students with an immediate response to a question or inquiry and can provide teachers with data useful in diagnosing student progress.

What is new is technology's capability to expand and enhance gamification, especially to personalize and track individual student performance and to provide immediate, actionable feedback. Technology can present students with an immediate response to a question or inquiry and can provide teachers with data useful in diagnosing student progress. Technology also allows multiple attempts at learning without the social stigma

of failure because games can be played one-on-one between the learner and the game and because the game can provide hints and eventually answers, providing appropriate scaffolding. So failure is temporary and fleeting. Games can be programmed, personalized, so that students compete against the computer or themselves rather than against fellow students. When designed properly, "gamification can shorten feedback cycles, give learners low-stakes ways to assess their own capabilities….Students, in turn, can learn to see failure as an opportunity, instead of becoming helpless, fearful, or overwhelmed" (Lee & Hammer, 2011, pp. 3–4).

Integrating Gamification Into the Classroom

Based on research into the elements of games, the following recommendations outline effective implementation guidelines for both structural and content gamification.

De-emphasize winning in learning environments. For our purposes, competition is when students are "constrained from impeding each other and instead devote the entirety of their attentions to optimizing their own performance" (Crawford, 2003, p. 8). When learners impede each other or employ defensive strategies that subvert the goal of the opponent, that can be referred to as "conflict." The goal of competition must be clearly set into the process instead of into the results, making it clear that winning or losing is very low in importance compared with learning and improving while competing (Cantador & Conde, 2010).

Create team-based games. Consider breaking students into small teams and consider using cooperative games. In a team-based environment, students believe they are contributing to a larger purpose than just competing for themselves. While not the case with all students, in any team environment some won't participate or take control, which does limit engagement. However, team-based games can minimize students' competing directly against one another; the emphasis becomes one of cooperating to make their team better rather than defeating another individual (Garcia & Tor, 2009). Team-based games also allow for a combination of both personalization and group learning as well as socialization. This combination provides learners with a safe environment in which they can learn at a comfortable pace but still feel as though their learning efforts are contributing to a larger group.

Create a challenge for the student. A challenge is a call to engage in a difficult but achievable task, suggesting uncertain outcomes resulting from one's actions, multiple goals, hidden information, and randomness (Wilson et al., 2009). Challenges have also been shown to be strong motivators in learning (Jones, Valdez, Norakowski, & Rasmussen, 1994; Malone, 1981; Schlechty, 1997). They are correlated with both intrinsic motivation and motivation related to fostering competence and student efficacy (White, 1959). Challenges should be used in gamification to initially engage students to start learning a task. Often students who are reluctant to learn content can be persuaded to begin the process by being challenged through the goals they are to achieve in the gamified context.

Of course, what one student views as an enjoyable challenge another may view as too difficult. Well-designed gamification offers multiple levels of difficulty and points of entry into the content. Such options allow learners with different knowledge levels to access the content and work toward the challenge, to personalize their learning experience from the beginning, and to change how they approach the content as their learning increases.

Make the experience goal oriented as opposed to time or duration oriented. In gamification, there are two types of goal orientation: performance orientation and mastery orientation (Blair, 2012). Each type of goal orientation impacts how achievements awarded to students should be constructed. Students who favor a performance orientation are concerned with other people's assessment of their competence. Students who have a mastery orientation are concerned more with improving their proficiency. Students have a predisposition toward performance orientation, and poor gamification tends to push students in that direction. To balance this predisposition, effective gamification should instill a mastery orientation in the goals and feedback and seek to balance both orientations. Developing students' mastery orientation means that they will more readily accept errors and seek challenging tasks, providing them with the opportunity to develop their competencies (Blair, 2012). Furthermore, when given mastery goals, students will have a higher sense of self-efficacy and use more effective strategies. Students given mastery-oriented goals perform better on complex tasks (Winters & Latham, 1996). In short, mastery orientation promotes students' accomplishing their personalized learning goals. To foster mastery orientation, educators should support students as they require them to earn achievements. Errors and mistakes should be treated as opportunities to provide feedback and encouragement.

Conclusion

Traditional schooling is often perceived as ineffective and boring by students (Dicheva, Dichev, Agre, & Angelova, 2015). The use of educational games and the gamification of instruction are promising approaches because of their abilities to engage students and teach and reinforce knowledge and to personalize instruction for each student.

Demonstrating to the student that he or she is making progress toward the content or skills to be learned is a key element in games and gamification. The act of moving through content on the way to a clear end point—such as mastery of a particular terminal, perhaps personal, objective—motivates students. Games and gamification can be used to personalize instruction so students know where they are in the instructional process, where they are going, and how much further they have to go (Kapp et al., 2013). A successful learner is typically active, goal directed, and self-regulating and assumes personal responsibility for contributing to his or her own learning. Gamification is learner centered in that it can be customized to accommodate student differences, can motivate students to put more effort into learning, and can help students take responsibility for directing and personalizing their own learning.

Action Principles for States, Districts, and Schools

Action Principles for States

a. Align game and gamification products, methods, and content with curriculum content objectives, including the Common Core State Standards and Next Generation Science Standards. Seek partnerships with organizations creating gamified curriculum and not just technology-based tools with no connection to curriculum. Curriculum first; game and gamification second.
b. Remove statutory and regulatory barriers that constrict a district's or school's ability to modify the time–pace–place structure of learning. Games and gamified instruction can be used anywhere at any time.

c. Provide information to districts and schools on promising gamification implementations in classrooms so they can witness best practices.
d. In teachers' and leaders' preparation and licensure requirements, include gamified learning concepts and methods.

Action Principles for Districts

a. Be cautious of programs described as "gamified"; the term is used in various ways, so be sure the program fits your purposes. Examine the gamified intervention to ensure the emphasis is on learning and not simply on winning.
b. Educate parents and the school board on the educational value of games and gamification. Often parents and school board members react negatively to children "playing games" instead of "serious study," so stakeholders must be educated on the value of games and gamification for learning and personalization of instruction.
c. Provide professional development for school leaders and teachers to successfully integrate games and gamification into their instruction. Professional development needs to include instruction on software platforms that enable gamification and on the curricular elements of gamification.
d. Create a catalog of games and gamified curricula that have been shown to enhance learning and make it widely available so schools and teachers do not have to search for effective solutions. One place to start is Mahon's (2014) *Creating a Content Strategy for Mobile Devices in the Classroom*.

Action Principles for Schools

a. Use the data captured through games and gamified instruction to provide personalized interventions and instruction. Games and gamified systems can provide rich data on learner performance but must be monitored and leveraged properly to provide the desired learning.
b. De-emphasize winning. Focus on the learning aspects and not on winning; keep the stakes low. Include group, cooperative gamification as much as possible as opposed to one-on-one competitions.
c. Provide both time and required technology tools for the students to partake in the game or gamified instruction. Ensure that all students can access the game platform and know how to properly use it.
d. Keep in mind that games and gamification are tools available to teachers but are not a panacea. Games and gamification must be appropriately integrated into the larger curriculum to achieve learner success.
e. Integrate games and gamification into the curriculum. Do not view games and gamification as extra or something apart from what is being taught. The best results from games are gained when the instructor introduces the students to what they will learn in the game, has them play the game, and then debriefs the students on what they learned playing the game.

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