

Solutions for Digital Learner-Centered Classrooms

Using Digital Games as Assessment and Instruction Tools



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Table of Contents

About the Author	xi
Introduction: The Gamer in All of Us	1
From Entertainment to Edutainment to Education	3
Teachers Versus Facilitators.....	8
Chapter 1: Finding Good Digital Games—Where to Look	11
Web Browser–Based Games.....	12
Sheppard Software	12
PBS KIDS Games	12
Mr. Nussbaum	13
National Geographic Kids	13
Poptropica	13
Funbrain	13
PrimaryGames	14
ABCya.com	14
Arcademic Skill Builders	14
Games for Change	14
PowerMyLearning	14
The Stacks	15
Facilitate Gaming Experiences With Browser-Based Games..	15
Steam	16
Gaming Consoles.....	17

App Markets: Tablets and Smartphones	19
<i>The Oregon Trail: American Settler</i>	20
<i>Angry Birds</i>	20
<i>VocabularySpellingCity</i>	21
<i>DragonBox Algebra 5+</i>	21
<i>Powers of Minus Ten</i>	21
<i>ThinkerToy: Shapes</i>	21
<i>Math Duel: 2 Player Math Game</i>	21
<i>Bridge Constructor</i>	22
The Most Popular Strategy for Finding Digital Games	22

Chapter 2: Evaluating and Field Testing Digital Games . 25

Learning With Digital Games: Strategies That Work	29
Lesson Motivation	30
Free Play	31
Baseline to Finish Line	32
Setting a Mental Stage	33
Gaming With Anticipation	34
Teams and Tournaments	35
A Learning Event	36
The “Long Experience” of Playing and Learning	37
<i>Minecraft</i> and <i>MinecraftEdu</i>	38
<i>The Sandbox</i> and <i>The Sandbox EDU</i>	38
WoW in School	39
<i>Lure of the Labyrinth</i>	39

Chapter 3: Gaming and Instructional Assessment 41

Summative Assessment	42
Repetition: Test-Taking Preparation and Review	44
Formative Assessment	45
Stealth Assessment	46
Learning Analytics	47
Takeaways for Readers	49
Takeaway 1: Five Educational Super Blogs for Digital Learning. .	49

Takeaway 2: <i>Evernote</i> Public Notebook.....	51
Takeaway 3: Digital Learning Game Database.....	51
Takeaway 4: DLGD Participation.....	51
Leveling Up Classrooms	52

Appendix: Discussion Questions	55
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References and Resources	57
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Introduction: The Gamer in All of Us

My seven-year-old son loves to play digital games! Whether on a gaming console or tablet, he enjoys this form of entertainment the most. Although he enjoys reading books, watching movies, and researching using the web, the interactive nature of a video game draws him in. He is proud of his accomplishments during gameplay. My little man boasts about upgrading his characters or unlocking a new tool during gameplay with as much of a sense of pride and accomplishment as he would have for scoring a touchdown in his football game, getting an “A” on his spelling test, or catching a fish. It takes a great deal of work, time, strategy, and commitment to achieve goals during gameplay—perhaps as much as it does to score a touchdown or earn an A on a test. Despite the constant time and mental energy he sacrifices in the pursuit of virtual fame and fortune, my son has fun—deep fun! This book explores what happens when hard work is paired with deep fun; it will help solve the following equation: $\text{Hard Work} + \text{Deep Fun} = ?$.

My son is not alone. Young Cordell Steiner, a third-grade student from Minnesota, makes a passionate plea in a TEDx conference for teachers to use digital games in their classrooms for teaching, learning, and assessment (Steiner, 2014). He speaks of the benefits of individualized learning—learning specifically focused on the particular needs of a student. For instance, if a student must learn or review geometric angles, then he or she plays a game where the

Chapter 1

Finding Good Digital Games: Where to Look

Finding good learning games is a task that requires research, time, and a bit of luck. The first key to finding a potential video game for learning is to understand how the game will be disseminated to the students. For example, if students do not have portable game consoles such as the Nintendo DS or a LeapPad, then games used for these types of devices will not work. Educators must think of the devices and technology infrastructure they have access to. If teachers have access to a cart filled with iPads, then that is the device they must specifically focus their game search on. Next, digital game-based facilitators must consider how the gameplay will occur with the students. Will each student have access to a device for the whole gaming experience? Will students need to break into small groups to share a device for gameplay? These logistical considerations are crucial factors for facilitators to consider when selecting a gaming platform students will use during the DGBL activity. The following are several different gaming platforms a learning facilitator might consider using with his or her students. Each type of gaming

Teams and Tournaments

Games are a natural mental construct for students to develop the fundamentals of teamwork and provide situational learning where they cultivate their collaborative skills. Through team-based games, players begin to understand the basic advantages of cooperative learning, such as the division of labor, benefit of pooling group knowledge to develop collective intelligence, and increased productivity. Working in collaborative learning groups also develops important interpersonal skills and morals—players explore the concepts of fairness, group dynamics, leadership, and responsibility.

Implementing teams during gameplay also has the benefit of using fewer technological resources since players are typically taking turns. Gamers must share a common goal. They must also win or fail as a team. A classic example of a game that can utilize teamwork is *Jeopardy!*. JeopardyLabs (<https://jeopardylabs.com>) allows facilitators to create *Jeopardy!* games online for free. JeopardyLabs can provide games for any grade level and academic content area. A facilitator can divide his or her class into two teams, and each team takes turns answering review questions. Team members for each team select questions, discuss answers, and celebrate or lament *together*.

Tournaments are another team-based game format that increases the competition drastically. Typically groups are much smaller and function in a manner where they either succeed or fail. In the multiplication game *Grand Prix Multiplication* (www.arcademics.com/games/grand_prix/grand_prix.html), the facilitator has student team members take turns performing the race. The goal of the game is to receive the fastest time around a racetrack as players answer multiplication problems. Each member of the team participates in the race, and all members add their results together for a combined score. The fastest team either wins or moves on to the next stage of the tournament.

When using teams or a tournament structure in an educational gaming environment, facilitators must look for ways for students to productively interact, equitably divide work, and share responsibility and accountability for success and failure. Facilitators have free rein to design and implement activities outside of the digital game to enhance the collaborative or competitive nature of gameplay. They can ask students questions, track and reward team progress, or provide gamers with an opportunity to reflect on gameplay or apply their knowledge to a follow-up task, activity, or challenge.

A Learning Event

In essence, the daily instructional lessons educators teach are a series of instructional events woven into a tapestry for learners. As schools embrace new learning tools and resources, the instructional resources at the fingertips of educators and students alike evolve. In the 1980s and 1990s, using video to teach was not as widespread in schools as it is today. At the start of the new millennium, schools struggled to supply every classroom with an instructionally valid computer station connected to the Internet. Likewise, many school systems are struggling to fund other instructional tools such as interactive whiteboards, document cameras, or laptops and tablets. Despite the struggle, new tools are entering classrooms daily, causing the media and tools they use to learn to expand greatly.

Most digital games easily available to students are short-form games or games that tend to take very little time to play or have premises that are easy to follow and master.

Played in small doses, short-form games can serve as great interactive examples, reinforcing and supplementing a teacher-driven curriculum. Short-form games tend to work best for learning when they're focused on a specific skill set or concept. Think of them like brief simulations. (Shapiro et al., 2014, p. 22)

Chapter 3

Gaming and Instructional Assessment

Instructional assessment has long been considered unpleasant for educators and students alike. The overuse of quizzes and high-stakes testing has created an atmosphere of tension, uncertainty, and stress in the education system. In fact, due to the practice of excessive testing, many schools sacrifice curriculum and rigor to prepare students to test well. For the learner, the process of assessment is like taking cough syrup—a distasteful elixir that will make them sleepy or foggy. Many traditional forms of assessment judge, classify, or even pigeonhole students, leaving them disoriented and foggy about what the assessment really accomplishes. Oftentimes, too much weight is allotted to traditional forms of assessment such as standardized tests to determine if a student will receive placement in honor classes, entry into top-tier universities, and eventually a fast track to a high-salary career.

For educators, assessments have become the driving force for everything! High-stakes testing determines what students learn, how they learn, where they learn, what facilities they use, what programs will be funded, what equipment they use, and how their performance

will be evaluated. This educational formula stifles educators and students alike. A great deal of instructional time is rationed off for test preparation and implementation. The final straw is tying teacher evaluation to test performance. There are far too many factors that go into teacher evaluation—test results must not be the most important or only reason an educator keeps her or his job.

Summative Assessment

Truthfully, the education system relies too heavily on summative assessments like standardized tests, unit tests, and quizzes. By definition, summative assessments are used to evaluate student learning at the end of an instructional unit or time period by comparing them against some standard or benchmark. Summative assessments can be useful to determine strengths and weaknesses in curriculum design and instructional delivery. They also provide a very detailed snapshot of the learner if they are well aligned to instruction.

However, this type of assessment only provides a brief glimpse of the learner. Educators, administrators, parents, and politicians should not simply settle for one snapshot to determine a student's academic success. All of these educational stakeholders should demand to see the entire photo album of snapshots! Summative assessment results should be one performance data point out of many data points.

Imagine a young learner; let's call her Hope. She is a bright, articulate young student who is energetic, sociable, creative, and very hardworking. She takes a timed bubble test filled with low-order thinking questions asking her to recall what she has memorized or read in a dense block of random text. She fails miserably. Hope is not dumb! Hope is not lazy! Hope is not a student with a learning disability or a developmental issue, or a slow learner. Hope is a student learning in an education system that depends too heavily