How to...

Gamify your classroom

By Ask a Tech Teacher
How to...

Gamify

your classroom

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Gamify Your Classroom

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Problem solving</th>
<th>Big Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Edugames</td>
<td>• How do I undo? (Ctrl+Z)</td>
<td>Technology differentiates education in surprising ways</td>
</tr>
<tr>
<td>• Flipped</td>
<td>• My screen froze (clear a dialogue box)</td>
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<tr>
<td>• Gaming</td>
<td>• I’m not a gamer (pick a simulation for non-gamers)</td>
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<tr>
<td>• Gamification</td>
<td>• I’m stuck (think creatively, critically. Work as a group)</td>
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<tr>
<td>• Learning style</td>
<td>• I don’t understand (be an explorer and risk-taker)</td>
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<tr>
<td>• Reach</td>
<td>• Someone on my team doesn’t know how to play games (help him/her)</td>
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<tr>
<td>• Scaffolding</td>
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<td>• Simulation</td>
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<tr>
<td>• Virtual</td>
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<tr>
<td>• Virtual world</td>
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<table>
<thead>
<tr>
<th>Time Required</th>
<th>NETS–S Standards</th>
<th>CCSS</th>
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<tbody>
<tr>
<td>90 minutes</td>
<td>1b, 2a</td>
<td>CCSS, Math.Practice, MP</td>
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</table>

Essential Question

How can games lead to learning?

Overview

Materials

Internet, simulation links

Teacher Preparation

• Talk with classroom teacher so you tie games into their conversations
• Ensure that all required links are on lab computers

Steps

Required skill level for this unit: Facility with internet. Online gaming background helpful but not necessary.

What is ‘Gamification’ of education? Help students come up with ‘use of game design elements in educational contexts’. What are some favorites? Do they see connections between those games and education (do they learn while having fun)?

Games offer what nothing else can. Through their virtual worlds, students have the opportunity to impact events around them with no prejudice based on youth. Properly-selected games invoke problem-solving, critical thinking, logical thinking, and collaboration—all significant skills in Common Core Standards, ISTE guidelines, and 21st Century classrooms.

Common Core alludes to skills gaming (and programming like Scratch and robotics) is known for, specifically (from Common Core Standards for Mathematical Practice):

• Make sense of problems and persevere in solving them—understand the problem, understand how to solve it within the constructs of the game.
• Reason abstractly and quantitatively—students must immerse themselves in the game’s environment. This requires they abstractly understand what is occurring and visualize the process.
• Model—games are models of a reality students likely will never experience.
• Construct viable arguments and critique the reasoning of others—the nature of games requires students interact with other players to succeed. They must understand the goal and discern which characters within the game can assist in its completion.
• Use appropriate tools strategically—as with real life, there are only so many tools at a player’s disposal. Determine what those are and how to use them to achieve goals.
• Look for and make use of structure—a map is good. Life works better with a plan.
• Look for and express regularity in repeated reasoning—learn the rules of the community. The ones that work can be repeated.

Give students opportunity to ‘sell’ you on using their favorite game for this unit. Let them gather in small groups, themed to a game, and discuss strategies for proving the efficacy of their game for unit purposes (see above bullet list).

Have students present their case to class:

• Discuss academic tie-ins—show game is more than just ‘play’.
• Discuss student engagement, intellectual motivation, and academic reach (what does game touch; how does it appeal to different learning styles).
• How will control be exerted? Class must remain ‘in control’.
• Provide citations to its effectiveness.
• Align selected game with standards discussed earlier in unit.
• Review its ease of use.
• Review its accessibility (do students require accounts? Are accounts free?)
• How much scaffolding is required for non-players?
• Does game encourage peer support?

Students will work hard in this portion of the unit because success means they get to play their favorite game during class time (in their minds at least). This 20-30 minutes may be the most effective part of the unit.

When arguments are completed, 1) students vote on which games to use, 2) you assign/create groups, and then 3) students pick a game their group will play.
Lesson Plan: Gamify Your Class

This list handles varied gaming levels of students. Include your own:

- **Bridge Builder**—learn how to design and test bridges
- **Coffee Shop**—run a coffee shop business
- **Electrocity**—how does electricity contribute to the growth of communities
- **iCivics**—experience what it means to be part of a democracy
- **Lemonade Stand**—run a lemonade stand business
- **Life (Insurance)**—manage your life and see why insurance is important
- **Making History: The Great War**—WWI strategy game
- **MidWorld Online**—learn French or Spanish while completing conquests
- **Minecraft**—(links to MinecraftEdu—fee required)
- **Mission US**—students role play the American Revolution or the Civil War
- **Past/Present**—life as an American immigrant in the early 1900’s
- **Science simulations**—lots of choices at 7th grade level
- **Second Life**—simulates just about anything if you can find it
- **SimCity**—learn to run a city

Here are tasks students must accomplish, regardless of game they select:

- Students post a start-up blog on 1) how game connects to education standards, 2) how they will be inclusive of non-gamers, 3) goals of unit.
- Students blog about 1) each individual’s involvement, 2) connections made between game and education, 3) how education was differentiated as needed, 4) where group experienced problems and how they were solved, 5) where group experienced success and why.
- Students participate in Discussion Board topics you as teacher choose (based on CC Standards above).
- Students complete three self-assigned tasks (or a number that works for your group) that demonstrate game’s educational applications. Share these in a blog post. For example, students may expect Minecraft to:
  - teach electricity and measure gravity
  - teach basic programming
  - create contour/topographic maps using randomly generated mountains and/or free mapping tools available
  - measure/evaluate area/volume by using a set number of blocks to explore how many shapes they can make with a specific area, volume, or surface area.

A note: Some games require registration, software, fees. If this is not an option for your school, come up with a list of game choices that satisfies your situation.
Suggestions for using **Bridge Builder**:

- Students can build highly detailed bridges, landscapes and environments.
- There are forty levels, so students won’t ‘finish’. They’ll blog about ‘learning’.
- Critical thinking is required because game is as much about building as designing and testing.
- Uses basic physics and engineering.
- Have students do a pre-blog about their bridge building knowledge. When finished, blog about what they learned.
- Requires purchase.

Suggestions for using **Coffee Shop** and **Lemonade Stand**:

- Preview both. Pick one.
- Play simulation.
- Track results in Excel.
- Evaluate data using Excel charts and graphs.
- Do a pre- and post-blog about student business knowledge.
- Optionally, create marketing materials—business cards, fliers, websites using tech skills already learned. Students can use installed programs like Word or Publisher, or online widgets like Big Huge Labs. They decide what will promote their business.
- Free online game, no registration required.

Suggestions for using **Electrocity**:

- This game provides critical thinking and problem solving in the use/abuse of electricity, in balancing the needs of people and environment.
- Easy to learn, fast-moving, and keeps non-gamers’ attention.
- Have students do a pre-blog about their knowledge on electrical use in cities. When finished, blog about what they learned.
- Free online game. No registration required.

Suggestions for using **iCivics**:

- Founded by Justice Sandra Day O’Connor to educate students about civics, democracy, government. For example, in We the Jury, students decide a tough case while learning what jurors discuss in deliberation room. They choose from different civil cases, analyze evidence,
weigh testimony, and use appropriate arguments to reach a fair and impartial verdict.

- Students can play several iCivics games.
- Students pre-blog about their civics knowledge and about what was learned.
- Free online, no registration required.

Suggestions for using **Life (Insurance)**:

- Life insurance isn’t a topic most students are knowledgeable about so blog reflections should be especially interesting.
- Students do a pre-blog about their life insurance knowledge. When finished, blog about what they learned.
- Available in iTunes, for iPads, for free.

Suggestions for using **Making History**:

- Places student in role of national leader with power to choose their path and alter history.
- Students learn not just history, but international trade, religious and cultural strife, military campaigns, diplomatic negotiations.
- Have students do a pre-blog about their government/power knowledge. When finished, blog about what they learned.
- Requires purchase.

Suggestions for using **MidWorld Online**:

- Perfect for students who struggle with a foreign language.
- As they play, have students write their blogs in the French or Spanish they are learning.
- Have students do a pre-blog about their foreign language skills. When finished, blog about how it improved (or didn't).
- Requires purchase/registration.

Suggestions for using **Minecraft**:

- Have students establish preliminary goals of surviving, finding food, building a shelter, creating tools that allow for their survival.
- Students can follow preset activities or create their own.
- Encourage collaboration among gamers to thrive in Minecraft.
• If your school has MinecraftEdu, expect students to participate in MinecraftEdu forums, wikis, and chats—following class’s agreed-upon rules for social media interaction.
• Have students do a pre-blog about their knowledge of goals they established for using program. When finished, blog how that knowledge changed.
• Screenshot credit: Wikipedia.
• Requires purchase/registration for full version.

---Suggestions for using Mission US:

• There are two games—‘Crown or Colony’ about American Revolution and ‘Flight to Freedom’ about Civil War. Both are easy.
• There are many reflection tools provided to encourage deeper thinking. Have students include these in their blog posts.
• Have students do a pre-blog about their Civil War and/or American Revolution knowledge. When finished, blog about what they learned.
• Requires registration; free to use.

---Suggestions for using Past/Present:

• Designed to impart decision-making and critical thinking skills in study of American history.
• An interactive 3-D “virtual world” in which student "becomes" a fictional character caught up in big issues of early 1900s.
• Appeals to gamers as well as novices.
• Have students do a pre-blog about their immigrant knowledge. When finished, blog about what they learned.
• Requires registration; free to use; teacher accounts available.

---Suggestions for using Science simulations:

• Lots of choices at 7th grade level. These aren’t as long as other simulations, but can be tightly focused on a topic.
• Expect students to complete several simulations in time allotted. Have students select those that are connected thematically.
• Good choice for non-gamers. They will have more time to reach a comfort level with the concept of ‘gamification’.
• Can be played online, downloaded as stand-alone, or embedded into a blog.
Lesson Plan: Gamify Your Class

- Have students do a pre-blog about their knowledge in the area of selected simulations. When finished, blog about what they learned.
- Free to use online; embeddable.

**Suggestions for using Second Life:**
- Participate in a scavenger hunt that fulfills tasks students assign to themselves.
- Or: Explore Greek/Roman architecture.
- Or: Visit five places being studied in class (i.e., art museums, Sistine Chapel, inside of a computer).
- Or: Use ‘sandbox’ to create/test/share 3D object.
- Or: Walk in someone else’s shoes, maybe someone with a debilitating illness.
- Requires registration.

**Suggestions for using SimTower:**
- Find free download (this links to Abandonia).
- Students play this game endlessly. As they do, note what events and factors facilitate business growth/failure.
- Have students do a pre-blog about business of owning/operating a high-rise tower. When finished, blog about what they learned.
- Requires free software.

**Suggestions for using SimCity:**
- Find a free download site or buy the update—newly-aligned with ed standards. Visit SimCityEDU for information.
- Students can play this game endlessly. As they play, do the following:
  - Explore geometry concepts through building roads
  - Learn about energy consumption, costs and consequences. comparison of use and effects of fossil fuel, nuclear power, wind/solar energy.
  - Study representative government and practical, city-building issues like zoning and public works.
- Encourages collaboration, time management and systems thinking.
- Have students pre-blog about their knowledge of running a city. When finished, blog about what they learned.
- Requires purchase (for update).

Expect gaming to be collaborative, where you as teacher learn with students. If you believe in the flipped classroom, this is a great unit.
____Involve parents through student blogs and your open-door policy. Do not let them hear about ‘games at school’ through a child’s casual comment. Make sure their introduction includes the game unit’s structure, goals, and purpose. Invite them to play if/when possible.

____When unit ends, reflect on it yourself: What did students accomplish? Did they experience the exhilarating sensation of learning for themselves rather than a grade?

____Throughout class, check for understanding.

____Remind students to transfer knowledge to classroom or home.

**Extension:**

- *Students have questions teacher can’t answer? That’s OK. Set up several students as ‘Alpha Gamers’. Their job: to assist and answer questions.*

- *Some students don’t like gaming? Like any unit of inquiry, some will like it better than others. Encourage student to get involved and give it a chance.*

- *Some students can’t win at game they picked? The goal isn’t winning. The goal is learning. What have they learned? Remind them that even failure has been fun. Remind them of the old adage: The only failure is when you stop trying.*

- *Tie this unit in with robotics: Have students join a virtual environment that supports concepts required for robotics, i.e., Second Life.*

- *Use Science Simulations or other science-based simulations as Minecraft resources.*

- *Extend learning by exploring how to program a simulation at Gamestart Mechanic—an online game building community for students.*

- *Have students comment on three classmate posts with suggestions/ideas.*

- *Support student gaming enthusiasm with an afterschool club. Have students complete requirements and present request to Admin (if necessary).*

- *More simulations—science oriented—at ClearLabs. They’re all free.*

- *More games—Planet in Action via Google Earth.*

**More Information:**

- *According to the Entertainment Software Association, 72 percent of American households play computer or video games. Enough said.*

- *Best practices for using games and simulations in the classroom*

- *Minecraft resources:*
  - [http://massivelyminecraft.org/](http://massivelyminecraft.org/)
  - [http://minecraftedu.com/](http://minecraftedu.com/)
  - [http://youtu.be/-mTf3i2koJA](http://youtu.be/-mTf3i2koJA)
  - [http://gamingeducators.pbworks.com/w/page/47285987/Gaming%20Educators](http://gamingeducators.pbworks.com/w/page/47285987/Gaming%20Educators)

***This lesson from the 7th grade curriculum text (5th ed.)***
Lesson Plan: Gamify Your Class

**Minecraft**

*In school*

It was lunch time on a warm spring day—the first sun of the season. Most students were outside enjoying one of the first pleasant days since the chill of winter faded. Three students came in my lab—7th graders—asking to play a program I’d never heard of called Minecraft. Their science teacher wanted them to use it as a vehicle to study minerals and geology. I knew the teacher so let them move forward and dashed off an email asking her to verify. She did.

As the students played, several 4th graders came in. “Are we allowed playing Minecraft?” Over and over. And then third graders. And fifth. To all, I said no, this was a special project for 7th grade science.

I realized I had to research this program that had so many students willing to forego the playground to sit at a computer screen with blocky retro characters who had none of the pizzazz of any other modern game. At first blush, it is about beat-em-up violence and destruction. That didn’t sell me. Where was the critical thinking? The geology and minerals? I went to Common Sense Media and found it ranks Minecraft 4/5 stars with a tagline *sandbox-style game with open online play fosters creativity.*

It goes on to say:

*Kids can learn creative thinking, geometry, and even a little geology as they build imaginative block structures in this refreshingly open-ended mining and construction game. Given carte blanche to sculpt virtually any creation of their choice in this 3-D space, kids can try out tons of possibilities while working toward simple objectives. An option to work with others on larger building projects can help kids develop collaboration skills. Minecraft empowers players to exercise their imagination and take pride in their digital creations as they learn basic building concepts.*

Subjects covered include:

- Math: estimation, geometry, shapes
- Science: geology, rocks and minerals
- Hobbies: building

...and skills taught:

- Thinking & Reasoning: defining problems, hypothesis-testing, problem solving
- Creativity: imagination, making new creations, producing new content
- Collaboration: cooperation, group projects, teamwork
I’d read enough. I decided to declare Monday and Friday lunches ‘Minecraft Mania’. I would watch, observe, make sense of all the excitement.

Word got out and my lab was packed those two lunch hours—all year. As I watched my students play, I saw lots of the thinking and risk-taking we encourage in traditional educational venues. Students rattled off fifteen-digit IP addresses that allowed others to join their game, created servers to compete against each other, strategized how to reach their goals, formed alliances with other players, researched solutions on the internet, shared with each other so everyone could participate (the program requires a fee, but that didn’t stop any one).

Is there something to this?

I polled my PLN and got no supporters. I might have given up, but ran across this article, Learn to Play: Minecraft in the classroom. And then these teaching wikis about educational uses of Minecraft, Welcome to the Minecraft in School Wiki! and Gaming Educators. There’s also an edition of Minecraft specifically for schools called MinecraftEdu.

As I was putting this review to bed, I came across ECOO 2012 who had a packed seminar on Minecraft in education. Among the benefits of playing this game:

- peer learning
- sharing computers
- co-operative play
- parallel play
- exploring
- testing theories
- developing hypotheses
- negotiating social agreements

I can’t think of another educational program that does so much in so little space with so many avid followers. Can you?
Other Singles from Structured Learning

- Bridge Building
- Debate
- Genius Hour
- Google Apps
- Khan Academy
- Service Learning
- Write an Ebook
# Lesson Plan: Gamify Your Class

## SL Technology Books for Your Classroom

### Structured Learning Books/Ebooks

<table>
<thead>
<tr>
<th>Which book</th>
<th>Price (print/digital/Combo)</th>
<th>How Many</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-6 Combo (all 7 textbooks)</td>
<td>$190.74/$162.84/$144.57 + p&amp;h</td>
<td></td>
</tr>
<tr>
<td>K-8 Combo (all 7 textbooks)</td>
<td>$246.52/$200.62/$447.14+p&amp;h</td>
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<tr>
<td>K-5 Keyboard Curriculum</td>
<td>$29.95/25.95/50.51 + p&amp;h</td>
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<tr>
<td>K-8 Digital Citizenship Curriculum</td>
<td>$29.95/25.95/50.93 + p&amp;h</td>
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<tr>
<td>Common Core—Math, Lang, Read</td>
<td>$26.99 ea/72.87 for 8-digi only (free ship’g)</td>
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<tr>
<td>K-5 Common Core Projects</td>
<td>$29.95/29.99/48.55 + p&amp;h</td>
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<tr>
<td>16 Holiday Projects</td>
<td>$3.99 (digital only) + p&amp;h</td>
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<tr>
<td>19 Posters for the Tech Lab</td>
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<td>18 More Posters for the Tech Lab</td>
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<tr>
<td>93 Tech Tips From Classroom</td>
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<td>760+ Tech Ed Websites</td>
<td>$14.99 (digital only) + p&amp;h</td>
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<tr>
<td>Bundles of lesson plans</td>
<td>$7.99 and up—digital only (free shipping)</td>
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<tr>
<td>Mentoring (1 hr. at a time)</td>
<td>$120/hr</td>
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<tr>
<td>Year-long tech curriculum help</td>
<td>$100 per year (online)</td>
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<tr>
<td>Consulting/seminars/webinars</td>
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### Total

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