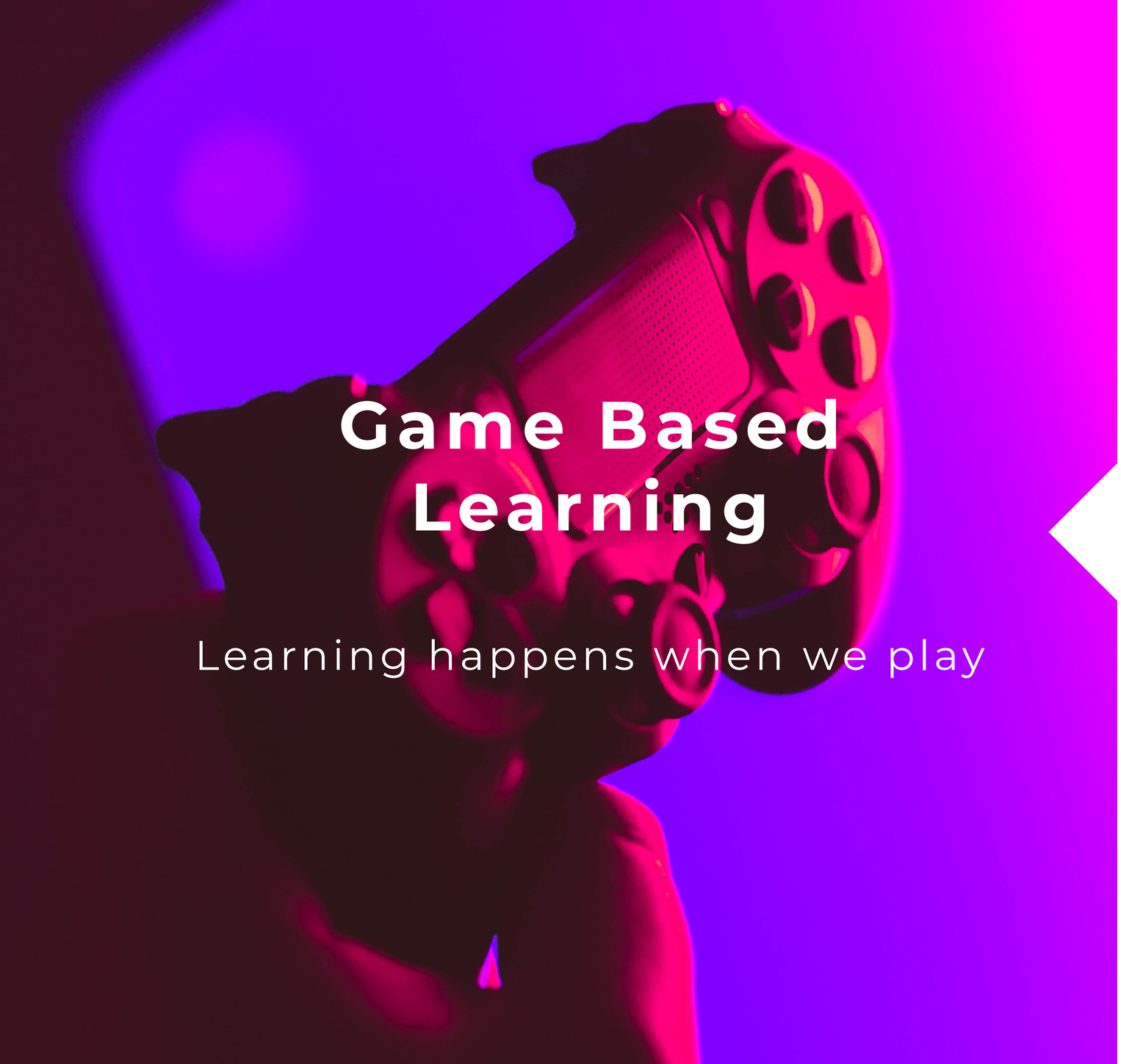


Game Based Learning

Learning happens when we play

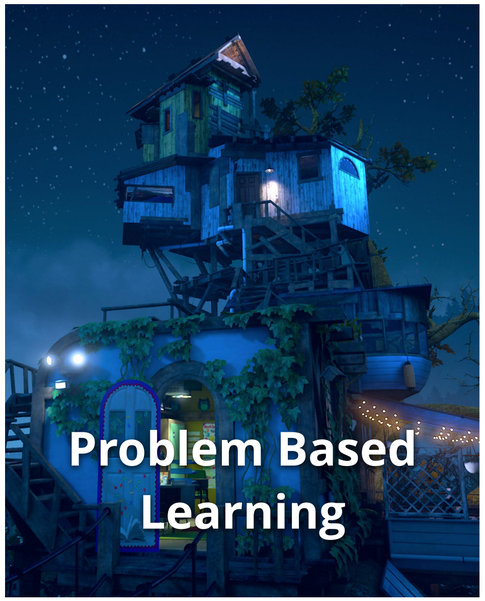
OLTD 508

Marlee Dunlop

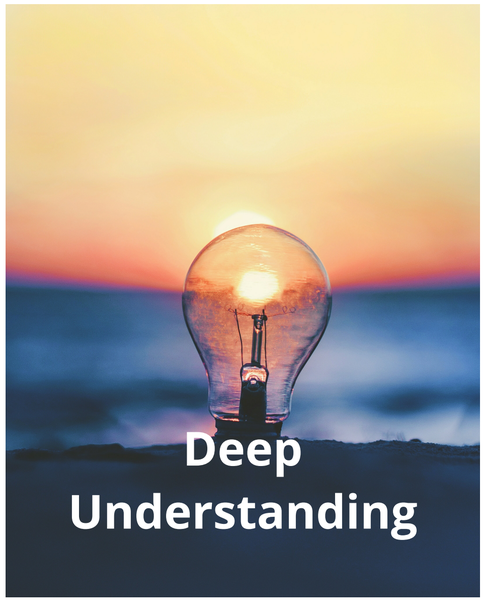
September 16, 2022

James Gee is considered to be the ‘Godfather’ of Game-Based Learning because he has done so much academic research into how our brains learn while we are engaged in gaming. He states that there are 13 principles of good learning that games use to hook people on learning. These principles fall into three categories which are:

- Agent/Co-Design
- Customization
- Identity
- Manipulation



- Well-Ordered Problems
- Pleasantly Frustrating
- The Cycle of Expertise
- Information (just in time and on demand)
- Fish Tank
- Sandboxes
- Skills Under Strategies

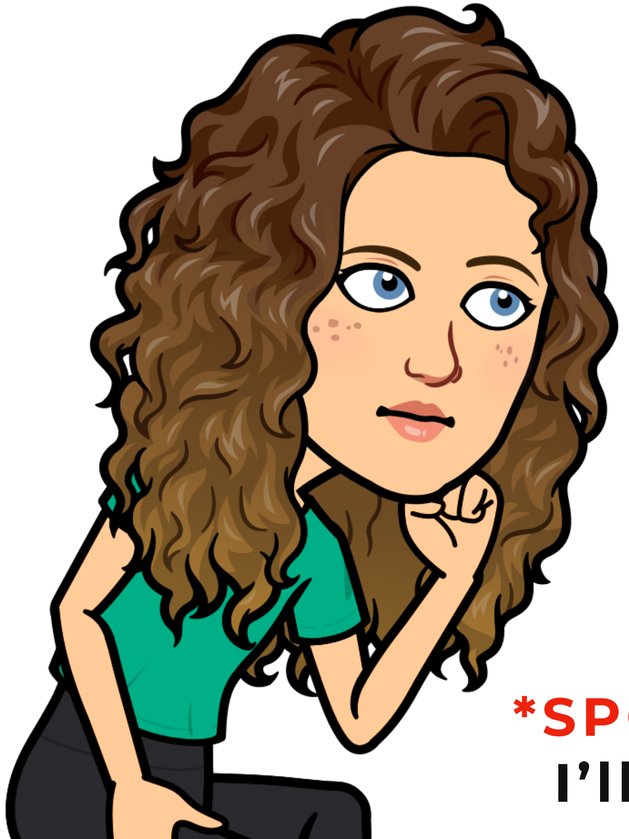


- System Thinking
- Situated Meaning or Meaning as Action and Image

MY TASK

Select three of Gee's principles to describe and explain why they appeal to me as a learner.

Decisions, Decisions . . .



***SPOILER ALERT**

I'll be selecting four


EMPOWERED LEARNING
Co-Design and Customize

EMPOWERED LEARNING

Co-Design and Customize

I chose to group these principles together because throughout my teaching and personal experiences they truly go hand in hand. What I have found to be a key ingredient in getting students to take ownership of their learning, is to make them a part of it. One way of doing that is to have them feel like “active agents” in helping to produce what they’re learning instead of just consuming information (Gee, 2016). In education, by co-designing with a teacher, university professor, or even classmate, students are then taking ownership and initiative of their own learning which directly affects levels of engagement and participation.

Co-Designing & customizing in the classroom

In the primary classroom I often open science and social studies units with a ‘co-design’ tool that many teachers refer to as the KWL chart (What we **KNOW**, what we **WONDER** and what we have **LEARNED**). Students help to co-design and customize where the unit will start and take off from. For example, when we began our ‘Plastics in the Ocean’ unit they were so excited to tell me everything they knew about the ocean, pollution, recycling, and the creatures that live in the sea. Then we collaborated as a class to come up with our wonders, which are really thoughtful questions that do not have strict ‘yes or no’ answers. Why is there garbage in the ocean? How do we catch plastic if it’s in the sea? Then we figure out how we are going to gather the information, who wants to tackle which wonder, and it’s proven time and time again, that by including students in creating and designing what they’re going to learn, that it sparks their motivation to dive deeper into the learning process. “Students cannot be agents of their own learning if they cannot make decisions about how their learning will work” (Gee, 2016).

EMPOWERED LEARNING

Co-Design and Customize Continued

Co-Designing and customizing using games!

Any game where students can modify a character, create their own world and interact within it, has to be one of the hottest commodities out there. Last year in my grade 1/2 classroom we had centre time three times a week in 40 minute blocks. I had 8 iPads which were all spoken for in the name of spending more time in the world of, you guessed it, Minecraft Education! At one point last year someone made a comment to me that maybe some students were spending too much centre time with Minecraft Education which to my reply was, “they’re playing, they’re learning, and they’re happy!”

I was watching students teach each other how to use different tools and how to build on different landscapes. Of course it’s educational because “it enhances creativity, problem-solving, self direction, collaboration, and other life skills (iD TECH, 2018).

No matter which way you slice it, by incorporating Gee’s co-designing and customizing principles in the classroom, on an iPad, on a gaming console, there’s going to be high levels of engagement, participation, and creativity. This sparks their motivation to dive deeper into the learning process. “Students cannot be agents of their own learning if they cannot make decisions about how their learning will work” (Gee, 2016).


PROBLEM BASED LEARNING
Well Ordered Problems
& Pleasantly Frustrating

PROBLEM BASED LEARNING

Well-ordered Problems

I chose to talk a little more about this principle because it's often over looked when we teachers are planning our lessons and creating our overviews.

At the beginning of a school year, we are assigned our class, receive a class list, and look to the curriculum for guidance - and in my opinion, that's all we should use the curriculum for- a rough guideline/outline. The reason for this is because more often than not, the range of academic and creative abilities in any classroom is a broad spectrum. "When considering problem-centered approaches to instruction, a central question has been how one can provide the support that students need to succeed in their environment" (Belland, 2017).

You cannot have 'well-ordered problems' without first knowing your students, and understanding how they learn best. When I read on about Gee's 'well-ordered' principle, it kept reminding me of how scaffolding the problems properly is imperative to students retention, their experience, and overall success.

Well-ordered problems in the classroom

One of the ways I've incorporated this principle into a primary classroom has been to assess my students understanding of the alphabet; letter recognition, phonemic awareness, letter blending and segmenting and then I decide what their differentiated literacy program is going to look like. If I were to jump into different sight word games and I have several students who do not have a solid grasp

PROBLEM BASED LEARNING

Well-ordered Problems Continued

of the alphabet, they will be disengaged, feel discouraged and defeated. These are the last things a teacher ever wants to see.

Well-ordered problems in the classroom using games!

When I think of well ordered problems and game based learning, I think of Splashlearn! Splashlearn is a math and reading program that is well designed and operates in a very linear fashion. When students start playing around with Splashlearn the app develops an algorithm for each students account that helps keep the problems at the right level which is so important because teachers don't want bored students and they also don't want upset or frustrated students!

My personal experience with well-ordered problems

I'm not much of a gamer however I've always loved the problem solving games like solitaire, tetris, and even a good old rubik's cube, and while those are problem solving games or puzzles if you will, they're not quite considered 'well-ordered' games. One game I haven't finished yet because it's getting quite tricky, is called 'The Witness.' The core of the game "is about logical deduction and as you solve more puzzles, you begin to learn how different variations work" (The Witness- My Favourite Puzzle Video Game, n.d.). I like that it makes me think backwards, to use my memory, and that you have all the time in the world to figure it out. I enjoy the game because the puzzles get more and more difficult to solve and when I overcome those challenges, I feel, well, really smart! Talk about well-ordered problems!

PROBLEM BASED LEARNING

Pleasantly Frustrating

Gee's 'Pleasantly Frustrating' principle is a pleasantly frustrating term to define. I feel pleasantly frustrated every time I attempt to make my aunt Collette's lemon meringue pie. Pleasantly frustrated is when the "learner feels at the outer edge of, but within their regime of competence. That is that while challenges feel hard, but doable" (Gee, 2016). It means that good learning is happening when you feel the challenge, and that the learner is aware that there's an accomplishment at the end of solving that problem which keeps them working towards that goal.

I'm going to be cheeky and say that the OLTD program has been 'pleasantly frustrating' for me because going through the process of learning about online tools hasn't always been easy, however it is in fact doable. With each passing course I get more confident and it motivates me to want to keep going, maybe even into the Masters program. It would be a huge accomplishment for me to achieve that. I suppose that's within my 'regime of competence.'

When listening to James Paul Gee explain the pleasantly frustrating principle, it was the second time I had heard the term 'FLOW', which is when you experience a "sense of fluidity between your body and mind, where you are totally absorbed by, and deeply focused on something, beyond the point of distraction. Time feels like it has slowed down and you are one with the task at hand, as action and awareness sync to create an effortless momentum" (Headspace, 2019). Pleasant frustration and FLOW are two things I love to witness happening in any learning environment.

PROBLEM BASED LEARNING

Pleasantly Frustrating Continued

Pleasant Frustration in the classroom

Having a growth mindset is the bread and butter to students who want to experience pleasant frustration and flow. Students with a growth mindset approach new challenges with optimism. They understand that with time, patience and a positive attitude, their understanding will improve, along with the enjoyment of the activity- whatever it may be. Pleasant frustration happens in my classroom when a contraptions tower falls down at a certain height, or when a K'Nex build doesn't quite work out. It falls down or breaks apart and then they just start rebuilding and recreating together. It also happens when my students are playing Prodigy a GBL math game where students create an avatar, and follow a fairy around an academy for their character, and explore a world, battling each other, all the while solving math problems. They learn to use different tools and strategies to solve one-step and two-step word problems. They're like the energizer bunny in flow when they're playing Prodigy. They just keep going, and going, and going!

Pleasant Frustration experienced by me in the gaming world

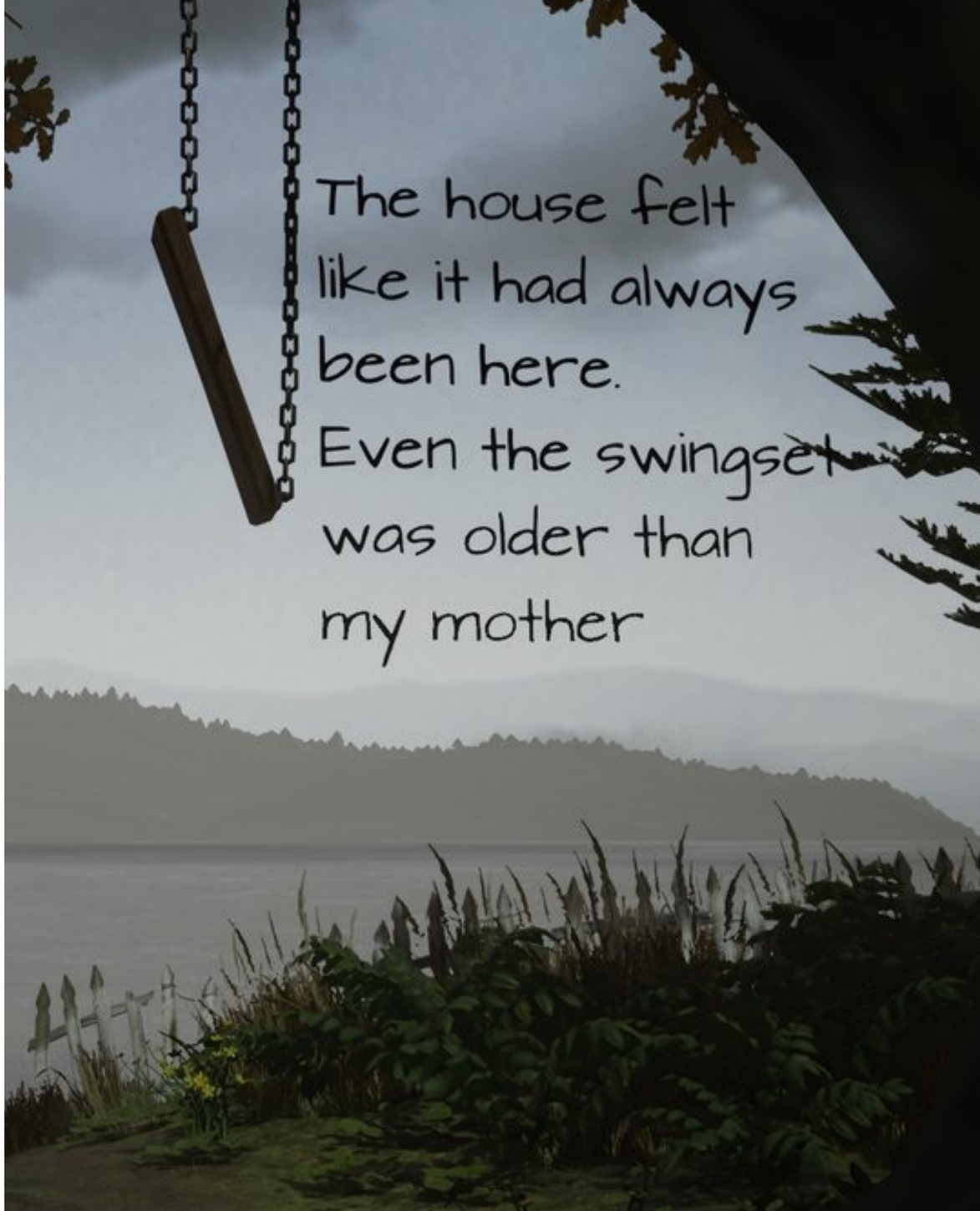
I have to say the first video game I played was not long ago and I was in FLOW with 'What remains of Edith Finch.' It was about a mysterious abandoned family home on Orcas Island and full of problem solving in which you had to explore different rooms of the house, while carrying Edith's journal.

PROBLEM BASED LEARNING

Pleasantly Frustrating Continued

The player, as Edith was encouraged to collect notes in order to try to figure out what happened to her family. There wasn't a points system or a time frame in which you had to complete the tasks. The character just gets to explore the property and try to solve one problem in order to get to the next. It was hauntingly beautiful. I finished the game in one sitting. It took me a few hours and it was way passed my bedtime. I didn't want to put the controller down. It was my first video game FLOW experience and I want another one!

I loved it so much, that I included the launch trailer in the next slide in case anyone has any suggestions.




SVEN FINCH
EDIE FINCH
CALVIN FINCH

Game Based Learning

Definitions

GAMIFICATION

When you gamify your classroom, you are adding in typical elements you would find in many games such as a points system, badges, leader boards and opportunities to have fun while on task. My last name is Dunlop so I created my own currency and called them Dunlop Dollars. Students could get Dunlop Dollars if they were on task, helping a friend, thinking outside of the box or even by simply getting caught doing a random act of kindness. If students collected 10 Dunlop Dollars by the end of each week, they got to spin the wheel of FUNLOP! The spinner could land on a bing, bang, or BOOM piece of the wheel which then correlated to 3 different prize bins and sometimes I would add new pieces in each week like “PE choice master!” (Where they could choose what we played during a gym block) Gamification can be done in almost any setting. You could gamify cleaning up, getting ready for school, or any task really!

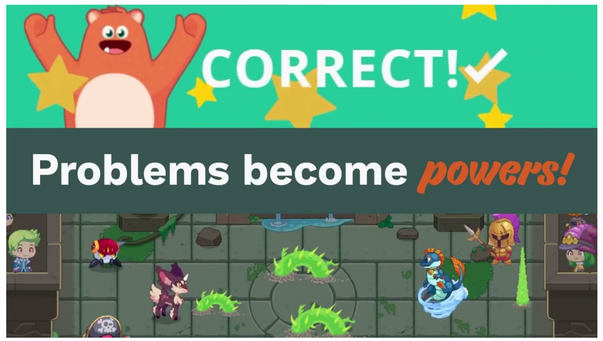
EXAMPLES

- Quizizz
- Dunlop Dollars
- Kahoot
- Points/ Chart Systems

GAME-BASED LEARNING

In contrast to Gamificaton, GBL “involves designing learning activities so that game characteristics and game principles inhere within the learning activities themselves” (University of Waterloo, 2018). In other words, incorporating elements of fun into the learning activities themselves! Game based learning shows up in my classroom in so many ways. I particularly have found tremendous success with the following:

- **Sight word bingo** (I observe students using strategies taught in class to help them de-code words, and they love it)
- **Splashlearn** has also been a useful GBL tool as it has so many fun sound effects, bright and funny characters and a treasure box for coin collection along the way.
- **Prodigy** is a class favourite for all as they explore the world, interact with each others characters, and battle each other while putting their math strategies to practice.



EXAMPLES

- Math or Sight word Bingo
- Splash Learn
- Prodigy
- Minecraft Education

Simulation

Most often, simulation games provide learners with the opportunity to practice their skills in a realistic setting. Simulation is the “re-enactment of real-world scenarios for various reasons, including entertainment, education, preparing for an anticipated event, or troubleshooting a problem. They are typically conducted in a controlled environment that allows for modifications or adjusting of variables as needed” (Simulations: Definition & Uses | Study.com, 2019) I haven’t had the opportunity to use simulation games in my classroom, however, my partner Tom regularly flies Digital Combat Simulator (the civilian version of the same simulation software used by real military aviators). He studies for hours in order to start up and fly everything from WW2 aircraft like the P-51 Mustang, to modern fighters like the F-14 Tomcat, F-18 Hornet, F-16 Viper and quite a few more. The manuals are often hundreds of pages (some as long as 800!). Did I mention he does this for fun? We also have an Oculus Quest 2 VR headset and I’m hoping that one day they make an exploration/simulation of different places in the world that younger students could interact with. The one I have in mind is Assassins Creed Origins: Discovery Tour. Check it out: https://www.youtube.com/watch?v=_yMDdQKfv70&ab_channel=UbisoftNorthAmerica

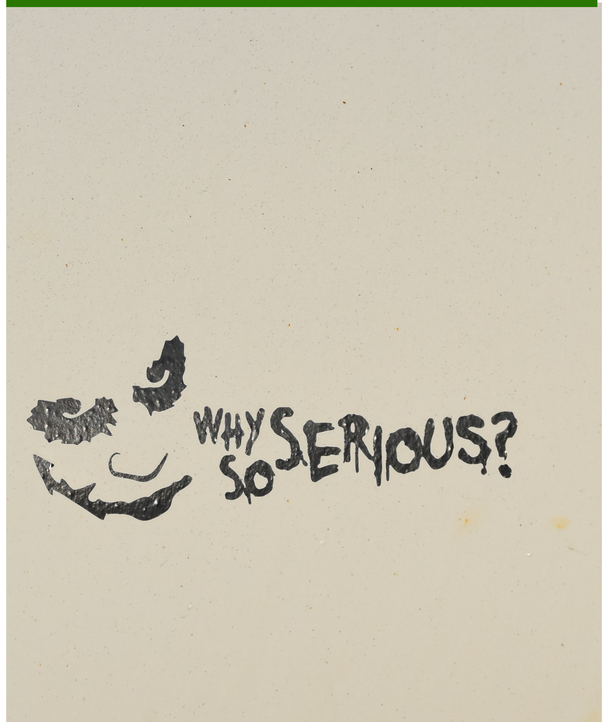
EXAMPLES

- Flight Simulators
- Medical/ Surgery Sims
- Driving Sims
- Cooking Sims

Serious Games

Serious games are not designed or created for entertainment purposes, rather they are designed with specific learning outcomes in mind. Serious games are meant to help the learner achieve a specific learning goal.

There's a time for fun and games and then there's a time for learning...hope you like it because it's happening! One of the serious games I've used in my classroom is called IXL math. It's an online web tool that helps students master essential math and literacy skills at their own pace. While there aren't any videos or fun sound effects, they do have a few animations and they are continuing to develop the program. IXL methodically scaffolds math skills which makes learning new concepts a bit more manageable.



EXAMPLES

- IXL Math and ELA
- Duolingo
- Our City
- Dragon Box

Commercial off the Shelf Games

Commercial off the shelf games or ‘COTS’ are primarily designed for entertainment purposes only. They can be board, card, computer, or video games. Sometimes they will incorporate elements of learning and strategy but COTS are there for the purpose of entertainment.

We use COTS at home and in the classroom. When my sisters and I get together at my parents or when we have extended family over we love to have some old fashion family fun after dinner. Often by throwing a couple of decks of cards on the table and playing cheat or guts! Last year I taught my class how to play ‘Spoons’ where every player gets 4 cards and the goal is to get four of the same suit- so it could be any card in the deck but you have to have every suit for that card (3 of clubs, 3 of diamonds, 3 of spades and 3 of hearts) Then you take a spoon from the middle and the chain reaction begins! The catch is that there’s one less spoon than there is players. They laugh their heads off they think it’s so exciting!

EXAMPLES

- Hungry, Hungry Hippos!
- Guess who?
- Uno
- Monopoly

REFERENCES

Belland, B. R. (2017). *Instructional Scaffolding in STEM Education*. Springer International Publishing. https://doi.org/10.1007/978-3-319-02565-0

Gamify. (2021). *What is Gamification? Education, Business & Marketing (2020 Examples)*. Www.gamify.com. *https://www.gamify.com/what-is-gamification*

Headspace. (2019). *What Is a Flow State and What Are Its Benefits?* Headspace. https://www.headspace.com/articles/flow-state

iD TECH. (2018). *Educational Benefits of Minecraft | Why Game Playing is Good for Learning*. ID Tech. *https://www.idtech.com/blog/educational-benefits-minecraft*

James Paul Gee. (2005, March). *Learning by Design: Good Video Games as Learning Machines*. ResearchGate; Symposium Journals. https://www.researchgate.net/publication/253367747_Learning_by_Design_Good_Video_Games_as_Learning_Machines

Simulations: Definition & Uses | Study.com. (2019). Study.com. https://study.com/academy/lesson/simulations-definition-uses.html

The Witness - My Favorite Puzzle Video Game. (n.d.). Games for Young Minds. Retrieved September 15, 2022, from https://www.gamesforyoungminds.com/blog/2019/8/1/the-witness-my-favorite-puzzle-video-game

University of Waterloo. (2018, March). *Gamification and Game-Based Learning | Centre for Teaching Excellence*. Centre for Teaching Excellence. https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning

REFERENCES

Belland, B. R. (2017). *Instructional Scaffolding in STEM Education*. Springer International Publishing. https://doi.org/10.1007/978-3-319-02565-0

Gamify. (2021). *What is Gamification? Education, Business & Marketing (2020 Examples)*. Www.gamify.com. *https://www.gamify.com/what-is-gamification*

Headspace. (2019). *What Is a Flow State and What Are Its Benefits?* Headspace. https://www.headspace.com/articles/flow-state

iD TECH. (2018). *Educational Benefits of Minecraft | Why Game Playing is Good for Learning*. ID Tech. *https://www.idtech.com/blog/educational-benefits-minecraft*

James Paul Gee. (2005, March). *Learning by Design: Good Video Games as Learning Machines*. ResearchGate; Symposium Journals. https://www.researchgate.net/publication/253367747_Learning_by_Design_Good_Video_Games_as_Learning_Machines

Simulations: Definition & Uses | Study.com. (2019). Study.com. https://study.com/academy/lesson/simulations-definition-uses.html

The Witness - My Favorite Puzzle Video Game. (n.d.). Games for Young Minds. Retrieved September 15, 2022, from https://www.gamesforyoungminds.com/blog/2019/8/1/the-witness-my-favorite-puzzle-video-game

University of Waterloo. (2018, March). *Gamification and Game-Based Learning | Centre for Teaching Excellence*. Centre for Teaching Excellence. https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning

All Images collected from Envato, Raw Pixel, Steam and Promotional Imagery for IXL Math

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