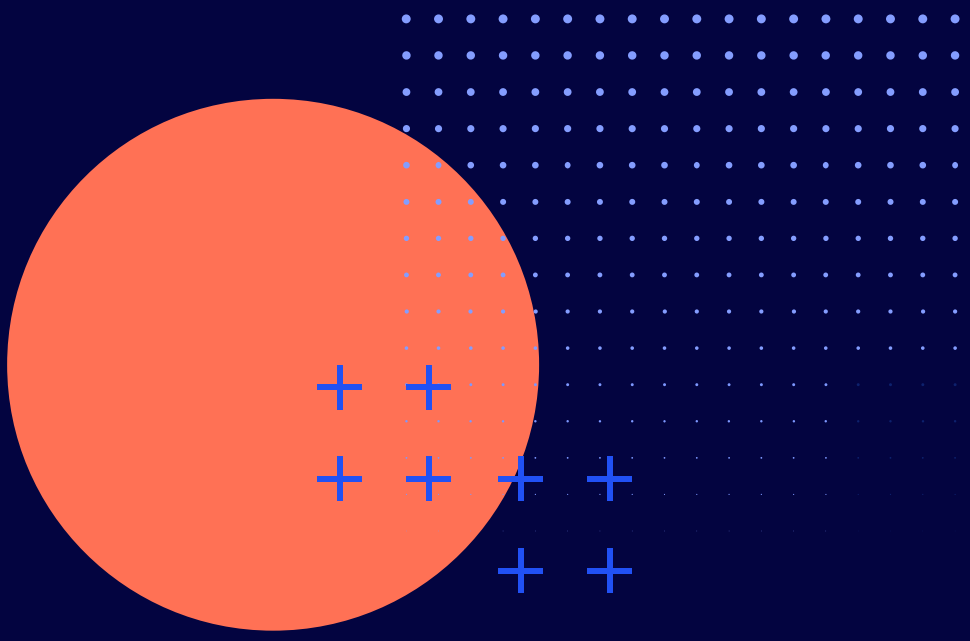
HUMMINGBIRDSDAY

The Gamification of Learning and Instruction



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HUMMINGBIRDSDAY

Creating immersive experiences

Hummingbirdsday is a design studio specializing in augmented reality (AR), virtual reality (VR), and mixed reality (MR) to create engaging, immersive experiences for brands. We craft innovative solutions using the latest AR/VR/MR technology to help companies revolutionize their customer experience.

What We Do

AR/VR Creation

Web/App Design

Product Strategy

Digital Transformation

Our mission is to innovate, defy, and emerge. The future of interaction is extended reality and Hummingbirdsday is here to bring your user experience to that next level.

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The Gamification of Learning and Instruction

“Nonsense,” says the sensible Bernard Suits: “playing a game is a voluntary attempt to overcome unnecessary obstacles.”

— Bernard Suits, The Grasshopper: Games, Life and Utopia

In the quote above, Bernard defines that playing a game can be a waste of time. And yes, *insert guilty face here* I’ll have to agree on this myself!

But why do we still want to play games? What makes a game motivate us? What’s the relationship between game, gamification, and learning? I’d like to discuss these interesting questions based on a recent gamification book I read called The Gamification of Learning and Instruction by Karl M. Kapp.

> In The Gamification of Learning and Instruction, Karl defines the term “game” as follows:
>
> “A player gets caught up in playing a game because the instant feedback and constant interaction are related to the challenge of the game, which is defined by the rules, which all work within the system to provoke an emotional reaction and, finally, result in a quantifiable outcome within an abstract version of a larger system.” — Karl Knapp

What do others say about games?

Wikipedia states that “a game is a structured form of play, usually undertaken for entertainment or fun, and sometimes used as an educational tool.”* You can say that we all play some kind of game throughout our life, whether they are games for sports, PC, boards, mobile, etc.

Playing one of your favorite games keeps the excitement on high and you may have experienced pulling an all-nighter. Because games are so appealing, parents have implemented “game-like” chores around the house for children to become more motivated to “play.” Chores are one of those words that don’t sound quite pleasant, but when a game mechanic is included, it transforms an unpleasant task into a fun one. Scroll down more to read more on this concept of “gamification.”

The Gamification of Learning and Instruction demonstrates 12 elements that make games really engaging.

1. Abstractions of Concepts and Reality

Let’s get a bit abstract here. Choose any game or think about a movie that you wish was a game. Now imagine you’re in it. You’re the player. Great! You just created a “game world.”

A game world is an abstracted reality. Transporting yourself into another world allowing you, as a player, to immerse yourself in the game story. You can experience the game without having to worry about unnecessary things. It’s like where games in chess allow players to dive into war strategy without having to actually get into war combat. A game world doesn’t force you to pay your taxes or check with your dentist every 6 months. And it certainly doesn’t kill you. At least physically! When a player is wounded, medical scenarios play differently than in real life. If the injury is severe, a real-life solution would be to immediately go to the hospital. But in a game,

the player can most likely consume a medicinal potion to increase its health, or life, points. When we dive into the game world, we enter a safe zone. Real life's unexpected tribulations become non-existent in our digital fantasy. By being unbothered with those unwanted circumstances, games allow players to go all in and focus solely just on the gameplay.

Farm Village is a specific example of this where trivial obstacles and tasks are eliminated, such as the arduous physical labor from fielding crops, natural disasters damaging the farm, and the burdensome commitments that apply to actual farmers with families. Farm Village is enjoyable because players get to give all of their attention to growing their desired produce. They can oversee their land with a relaxed approach and their situations are a lot more controllable with the field's game mechanics.

2. Goal

Having a goal helps us differentiate between what is a "game" and what is "play." A game is goal-oriented. To make a game, you need to have a set of rules, along with competitive elements, that guide players to reach their goal. On the other hand, without a goal leads to free play. According to George Santayana, "Play is whatever is done spontaneously and for its own sake."

Here is a chart from the article "From Game Design Elements to Gamefulness: Defining Gamification."

3. Rules

In simplest terms, you need to have a set of rules in a game. No rules? No game.

4. Conflict, Competition, or Cooperation

Conflict, Competition and Cooperation are three sister elements to a good game design. Opponents give players a challenge or conflict. Players are encouraged to defeat their opponents in order to win. To motivate players to invest in themselves, adding a competition element for players to focus on their performance, allows the player to believe their avatar is better, faster, cleverer, and more skilled than the opponents. And lastly, cooperation between players can evoke a more amicable game setting where parties have mutual desires and beneficial outcomes by collaborating together.

5. Time

Time is usually implemented to motivate players to move quickly or take immediate actions, without wandering aimlessly within the game.

6. Reward Structures

There are many reward ideas to provide players plenty of motivation, such as badges, points, and leaderboards. It also helps them identify what desirable action to take to achieve their goals. According to research on gamification rewards, badges and food emit a chemical release of dopamine in the mid-regional part of your brain, stirring emotion of pleasure.

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7. Feedback

Feedback is designed to evoke the correct behavior or action to guide the players toward the correct outcome.

8. Game Levels

Players go through different levels when playing a game. This is how game developers are able to monitor and guide players to achieve their victories in a step-by-step process, leading them into the final big win.

Game levels have three goals:

- Each level adds to the game story narrative.
- Each level adds a skill or reinforces a learned one.
- Each level exists as a source of motivation.

9. Player Levels

All players have their own preferred skill set. An expert player will prefer to play more challenging games while a novice player will prefer a beginner's level. To cater to all types of players, it's important to develop a game with easy, intermediate, and hard settings. For beginners, tutorials to demonstrate the rules of the game can be introduced. Players at the intermediate level can practice their skills to mastery while receiving game highlights, clues, or any other additional instructions. And finally, the hard, or expert, the level can be the place where experienced players are able to test their skills in a more "freestyle play." Freestyle play can be defined as how

users play more independently. This can open some more creativity for players to have fun. By incorporating different skill levels, a game can garner a wider audience.

10. Storytelling

Earlier, we've spoken about game worlds in our first element, Abstract Concepts, and Reality. In a game world, players often encounter some kind of narrative.

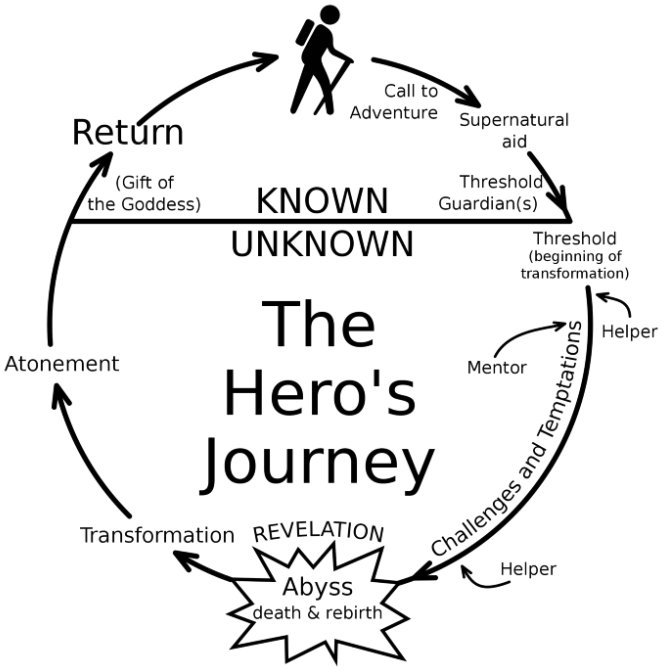
Though, not all the games require a story behind them. Classic games like Tic-Tac-Toe, Hide and Seek, and Sudoku are not based on any story. As technology advanced, games began to add thin layers of meaning and interest to provide a more immersive, entertaining experience. Early arcade games, such as Pac-Man and Donkey Kong, have names and graphics which give the game meaning. And video games today promote complex storylines with interactive narrations that engage players to keep playing. A well-crafted game-based focus on helping players to solve problems and easily for them to recall.

With story-telling, the concept of a "hero" is widely advertised. A notable researcher of hero myth patterns is Joseph Campbell. Influenced by the analytical psychology of Carl Jung, Campbell studied Jung's monomyth to break down ideas and compare religions.

Campbell wrote in his highly acclaimed book The Hero with a Thousand Faces (1949):

"A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man."

A summarized guide about Campbell's study of, "The Hero's Journey" is depicted below.



The Hero's Journey can be divided into three "acts" or sections:

1. Departure	Originally for an ordinary world, the hero receives a mission to go on an adventure. The hero may be hesitant to follow the mission until he receives the help of a guide.
2. Initiation	The hero begins his voyage by travelling into the unknown, or as Campbell calls it, "special world." There, he is faced with various tasks and challenges that he must accomplish either alone or with a team. As the plot thickens, the hero finally steps foot into the "innermost cave," or the high peak of his adventure. There, he must overcome "the ordeal," or the biggest obstacle/enemy, and undergo "apotheosis" to gain his reward.
3. Return	Once he receives his award, the hero needs to return back to the ordinary world. The plot's dilemma is solved and the hero is able to upgrade his lifestyle and enjoy a better life with those around him.

11. Aesthetics

As a digital product, visuals are pretty important. Depending on how a game's aesthetic, like the environment of the game world, is visually aligned, detailed, contrasted, and colored, it can really affect a player's immersive experience either positively or negatively. However, educational games and simulations don't put a lot of value in these sorts of visual elements, which may be the reason why users find them to be less engaging and compelling to experience.

12. Replay or Do-Over

Have you ever wanted to replay a game over and over again? Maybe it was because of the level's difficulty? Most commonly, games allow for players to practice their set of rules by testing them. This can allow for game developers to understand which approach was successful and which failed and find out why. Most games have a built-in repeat feature for players. If too many failed attempts were made, they have an option to momentarily have the player move down to an easier level with the hopes of gaining more hints to hack in defeating the challenging level. These types of failures simply provide players an option to record their progress within the game itself.

One thing to note here is that players commonly find it unsatisfying if they find a game too easy, meaning that they accomplished a game without real failures or do-overs. Failing within a game is also considered another motivational drive that makes the taste of winning more sweet.

What is Gamification?

> "Gamification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems." — Kapp

In the beginning, we shared about how parents try to make chores seem like, well, less of a chore to their kids. If a kid had to mow the back lawn, the idea can be daunting and annoying. To be honest, what kind of child would enjoy this menial chore? But let's say, divide that lawn up into sections with a set of rules and challenges. The rules could be as simple as, "You have to mow vertically in this section, and horizontally in that section," with challenges like, "How many strokes does it take to finish a section vertically vs. horizontally? Which section can you finish the fastest?" Of course, the child can be informed that there will be a reward at the end to the parents' discretion and the child's gleaming approval.

Margaret Robertson explains that games, or "gamification is an inadvertent icon. It tricks people into believing that there's a simple way to imbue their thing… with the psychological, emotional, and social power of a great game."*

What is NOT Gamification?

We believe that it is helpful to understand gamification by clarifying what it isn't with common misconceptions.

The following six elements are not defined as gamification:

1. They're only badges, points, and rewards

Please note here that gamification does not just apply to these motivators: badges, points, and rewards. Yes, they are the most common game elements utilized in a wide variety of systems, but they're not the only ones. Additionally, gamification also embraces all aspects of game-based thinking such as engagement, storytelling, character visualization, and problem-solving.

2. You can't learn with games

Gamification does not downgrade the value of "real learning." It exists to enhance the overall learning experience. In a short amount of time, a well-designed game is able to help users acquire skills, knowledge, and abilities with high retention rates and effective results.

In actuality, a gamification is a serious approach to accelerating the experience curve of learning, teaching complex subjects, and systems thinking.

3. New

Gamification is not a new concept. Militaries have utilized "war games," simulations, and goal-oriented missions to train their soldiers for centuries. Researchers and historians believe that the very first game using military figures for the fictional battle play was called Chaturanga from the 7th-century.

4. Works for all areas in learning

You'll have to really think about this. Just like every organ has its own place and purpose within our body system, there are times when gamification can be effective and not so effective. If gamification is seen as a panacea and

applied to every single learning event, it will quickly become trivialized and non-impactful.

5. Gamification is just for the game world — not real life

Although the game world is drastically different from reality at times, gamification can still be applied to real life. You can target a goal to achieve during a certain process to make the process more enjoyable, like building a healthier body, learning a new instrument, being better at certain tasks, etc.

Again, it requires “game thinking” and game mechanics to help users enjoy the process.

6. Easy to create

Designing the right game and developing it takes time with great intention. It is a meticulous approach that requires an in-depth process of deciding its game elements, mechanics, scoring, and determining the winning states.

Then Why Gamification?

Here are a few reasons why integrating gamification is great for your business:

1. Gamification is growing

By 2025, the gamification market size is projected to grow from $9.1 billion in 2020 to $30.7 billion at a Compound Annual Growth Rate (CAGR) of 27.4% during the forecast period — According to *Markets and Markets’ website.

2. Millennials & Gen Z

Both of our modern generations are now the powerhouse in the workforce. Due to the fact that they grew up with technological changes, they are known to have a short attention span. Traditional, classroom-like education will bore those who grew up playing video games.

3. Immersive and engaging experience

Studies have demonstrated that those who have experienced VR with headsets adopt a new outlook of their surroundings. Immersive technology can change a player's behavior and bring gamification to the next level.

Learning v.s. Gaming

Gamification can aid as a motivator for players to solve problems while achieving a particular goal.

In a game, the concept of teaching works seamlessly as the game progresses. For instance, I played Assassin's Creed on my PS4 recently. In the beginning, it asked me to move around and show me which key to press to collect coins, and change weapons. When I get lost in the open world, I always can see the hints about how to continue the game. For example, I got a hint stating, "There are some hidden entrances in this area." Because of this hint, I kept looking around until I found a sandy passage leading to the upper floor.

I also got a lot of opportunities to practice by battling with easy-to-fight enemies. Assassin's Creed trained me to ride a camel and do archery which was really useful for my next challenge — hunt animals. Once I improved my skills, I received quests to kill evil opponents who display themselves as regional kings.

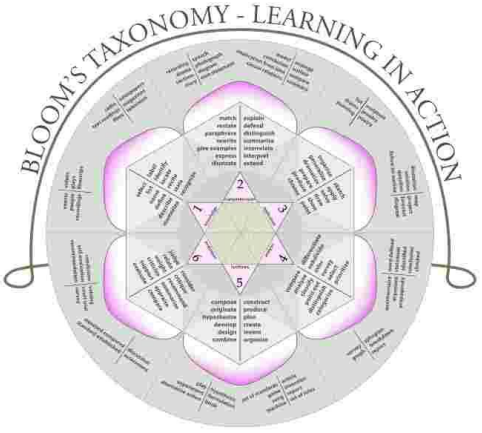
Overall, I had a great learning experience. Starting with the navigation, then to basic serving skills, combat, taking missions. It not only provided me with small wins but also new activities, challenges, and bigger storylines to make me want more. Every time I explore new areas and finish a quest, I get experience points (EXP) to level up. And with each additional level, I acquired new skills and unlocked new areas within the game. The excitement continues.

These are the following recognized skills that players acquired from playing games:

1. Hand-eye Coordination
2. Problem-solving Skills
3. Quick Decision-making Skills
4. Risk-Taking Skills
5. Leadership Skills
6. Physical movement (exercise and rehab)

To classify education learning even further, here is a set of three hierarchical models called Bloom's taxonomy.

Bloom's taxonomy showcases six levels of learning, which directly relates to specific game elements.



Source: Wiki

The six levels of Bloom's taxonomy:

Levels	Description	Game Elements
1. Remember (Knowledge)	To recognize or remember certain facts, concepts, or answers without fully understanding what they actually mean.	Narrivatives, storytelling, replayability, factual information (rules/roles), tutorials, missions, and core values of the game.
2. Understand (Comprehension)	To comprehend is to understand the facts and ideas by organizing, comparing, translating, interpreting, describing, and listing main ideas.	Occurs most often at the "entry/beginner level," where players are still in the learning stage and can begin to identify different game objects by sorting out their concepts.
3. Apply (Application)	To apply is to utilize the given knowledge and solve problems in new situations. Given knowledge can be facts, techniques and rules. Learners are expected to incorporate previous learnt information and skills to unlock next challenges, applying them in any situation.	Experience all kinds of various levels and quests, while accomplishing the goal of each mission.
4. Analyze (Analysis)	To analyze is to examine and break down information so that learners can determine how they related to one another. Learners can identify and infer the information to support generalized characteristics.	Compare different types of equipment, objects, and use the best game objects to equipt to accomplish the mission.
5. Evaluate (Evaluation)	To evaluate is to objectively look at various opinions and make judgements based on its credibility, quality of work, or set of criterias.	Solving problems and puzzles, choosing paths in the game, and unlocking different skills to master the game.
6. Create (Synthesis)	To synthesize is to build a complete structure of various elements, putting smaller parts into a complete whole.	Once one reaches a skill of mastery, learners can achieve freedom with a bonus game or freestyle play.

Other additional levels	Description	Game Elements
Soft Skills	Negotiation, leadership, and selling skills.	Role-playing, and social simulation.
Psychomotor	The intersection of physical skills and cognitive knowledge	Simulation, demonstration, and a haptic device.

Conclusion

Overall, The Gamification of Learning and Instruction helped us understand that games instigate drives — a set of playful motivations — for players to want to continue playing. Games let its users immerse themselves in a fantasy-like world, where physical or real-life concerns become abstract, and anyone can step into a heroic journey. What makes games so intriguing are those exact motivations, which defines gamification as the instigator. Just as technology continues to grow, gamification expands the way learners can acquire new skills. We can no longer stand still and ignore the power that gamified learning has on our society today.

Thanks for reading!

Don't forget to check out the Hummingbirdsday website for blogs, podcasts, and more e-books on creating immersive experiences with VR, AR, and MR.

Visit website

Citations

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