

Gamification in e-Learning

How to understand your audience
and improve your learning



Dominique Wu

Copyright © 2021 by Hummingbirdsdays.

All rights reserved. Please do not publish or post
online any part of this eBook without our permission.

If you'd like to quote our content, please reach out to
us at hummingbirdsdays@gmail.com and ask.

Creating immersive experiences

Hummingbird Day 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 Hummingbird Day is here to bring your user experience to that next level.

Work with us



TABLE OF CONTENTS

Level 1: E-Learning	6
Level 2: Deliberate Fun: Know Your Audience and Their Motivations	16

LEVEL 1

E-Learning

What is e-learning?

Because society today is moving rapidly, companies are utilizing e-learning (learning supported by technology and the internet) to advance towards competitive new skills. In 2015, the global e-learning industry reached \$107 billion and market experts expect this to escalate up to \$325 billion by 2025.

E-learning with gamification

Gamification is a great way to improve the e-learning curve. It inspires the notion of play as an important part of the human learning experience. In the book Actionable Gamification, author Yu-Kai Chou defines the term “gamification” as the idea of combining education and entertainment together. In 2015, business.com shared that 40% out of 1000 organizations worldwide have prioritized gamification as their best learning tool to improve business operations. 90% of employees reported that they feel more productive from utilizing gamification.

“Gamification is the craft of deriving all the fun and engaging elements found in games and applying them to real-world or productive activities.”

— Yu-Kai Chou, Actionable Gamification. 2015.



Fig. 1 - Octalysis diagram, Yu-Kai Chou, 9 Oct. 2019.

Fig. 1 demonstrates Chou’s Octalysis diagram, where he introduced 8 core drives of gamification.

1. Epic Meaning & Calling
2. Development & Accomplishment
3. Empowerment of Creativity & Feedback
4. Ownership & Possession
5. Social Influence & Relatedness
6. Scarcity & Impatience
7. Unpredictability & Curiosity
8. Loss & Avoidance

Extrinsic	Intrinsic
<ul style="list-style-type: none"> • Development & Accomplishment • Ownership & Possession • Scarcity & Impatience • Loss & Avoidance 	<ul style="list-style-type: none"> • Epic Meaning & Calling • Empowerment of Creativity & Feedback • Social Influence & Relatedness • Unpredictability & Curiosity

Fig. 1 - Octalysis diagram, Yu-Kai Chou, 9 Oct. 2019.

Yu-Kai Chou invented the Octalysis map to analyze different games and define which gamification category each game classifies under. Gamification should be balanced on both sides to satisfy user motivations.

The Octalysis chart shows Yu-Kai Chou's 8 core drives and divided them into 2 types – extrinsic and intrinsic. Extrinsic motivation is a short turn that is based on outer motivations like game mechanics (i.e. leaderboards, badges, and points). Intrinsic motivation is a long turn based on inner motivations like self-love and self-improvement.

In another book called Deliberate Fun: A Purposeful Application of Game Mechanics to Learning Experiences, Dr. Jonathan Peters teaches the importance of understanding our users with four questions: who, what, why, and how.

Who: Who are the learners?

What: What might be “fun” for those particular learners?

Why: Why do learners like competition? Why do learners like to be focused quietly instead?

How: How can we make our observations on human behavior benefit what will work and not work for our learners?

“What is fun for you may not be fun for someone else...Self-hugging is the concept that everyone believes everyone else has the same motivation as they have. This tendency causes us to create learning experiences that we enjoy, not necessarily what our learners will enjoy.”

– Johnathan Peters Ph.D., *Deliberate Fun*, 2020

We need to understand what triggers extrinsic and intrinsic motivations. We can do this by focusing on the potential learners and not by relying on our own assumptions. To find how learners become more motivated, additional gamification factors, such as storytelling, visuals, challenges, rewards, and feedback, are great catalyzers for user engagement. It gets people to learn from the action – the practice of doing.

Gamification Training

According to the National Training Laboratories, “learning by doing” helped them grow retention rates by up to 75% compared to just sitting still and listening to a classroom lecture.

Below are some e-learning elements to help increase engagement and retain learning better:

Avatar

Avatars are a good combination of reality and creativity. The learner can have an emotional connection aspect into the e-learning experience and gain a sense of ownership of the avatar. This will make the learner motivated and achieve more for the avatar. According to the research, learners will stick to something when they feel like they are in control.

Try Again. Fail Again. Fail Better.

Unlike in real life, where people tend to play safe, people love to experiment, take risks, and try again since there is nothing to lose. Remember, the best learning experiences come from facing trials and errors. Therefore, it's important to provide great feedback. Since people are more open-minded to take the risks, they are also more motivated to improve.

Stimulation

By integrating AR/VR, learners can immerse themselves in the environment and respond to the situation in real-time. Especially for the medical, aerospace, hazardous environment without putting the learner in a dangerous situation.

Storytelling

A good game usually involves good storytelling. Just like avatars, you can draw an emotional connection with users if there is a compelling story. In games, learners often return and want to explore more. Many will enjoy a good narrative, game-based learning that targets not only the brain but also the heart.

Challenge

By increasing the challenge each time, learners can develop skills, overcome the challenges, and achieve the goal. By defining the meanings behind each challenge, they will feel a sense of achievement and feel accomplished. For example, implementing a quest, or mission, will keep players more engaged and motivated to continue with the expectation that, if done well, they can win.

Creativity & Surprise

Whether it's building your own world or crafting something with limitless possibilities, creativity will help learners to engage more and surprise learners each time when learning (i.e. games like Lego and Minecraft). By including these elements for e-learning, users will feel encouraged to learn more and arouse their

curiosity and explore the possibility of the knowledge.

Leaderboard and social recognition (Badges & Points)

Leaderboards, badges, and points increase learners to participate and share with their friends more. Gaining recognition from others is a great motivator to continue and aim to do better. It draws back to having an emotional connection where receiving validation merits can boost a learner's self-esteem. Competitions with peers may also increase user engagement as well.

Define the goal

Goals are achieved through various tasks and are often organized through levels of difficulty from easy, medium, and to advanced. With each level, goals are set accordingly so that users can achieve their next level with step-by-step improvements.

Progress and instant feedback

Make sure the user knows the rules of the game and set time to play. Visualizing the progress and giving learners instant feedback and comments would help them to achieve the goal. Games usually provide feedback at the end of each level or task so learners can correct the mistake to achieve the goal.

Create a community

Create a community that will increase the retention of the users to allow them to feel like they belong to a group or a part of the tribe.

Users often perform better in an immersive environment, where they can give and receive feedback. By sharing, learning, and growing with a community, users may be empowered and will build better learning habits from each other.

Here are some examples of gamification for learning:

Duolingo

Duolingo is considered one of the most successful language-learning apps using gamification. Studies have shown that Duolingo learners' scores on reading and listening tests match university students who completed four semesters of language study. Duolingo learners reach four semesters of language proficiency in half the time as U.S. university students through gamification.

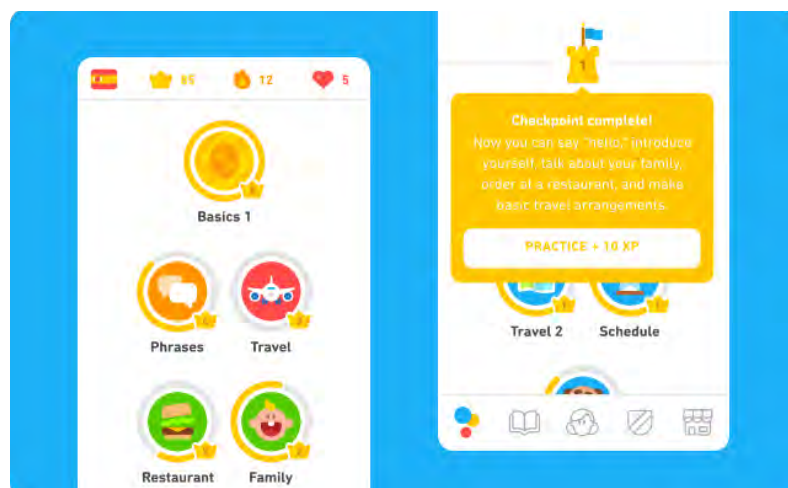


Fig. 2 - Duolingo's mobile app

Yousician

Yousician changes the way the learners learn music in an approachable and convenient way.

Learners can choose their own lessons and play their instrument(s) with fun games to unlock the next level. Currently, there are lessons for guitars, bass, piano, ukulele, and singing available. Learners can follow their own pace and keep learning and playing.

McDonald's Till Training

Fast-food franchise McDonald's partnered with City & Guilds Group Kineo in developing a more effective way to train their employees. Their goal is so that McDonald's will be able to enhance their customer experience through a better till system – an improved and fun POS system for sales. The system highlights game features like lifelines and bonuses, along with feedback elements like customer responses and scores, to engage the trainees. Trainees have noted that this platform gave them the freedom to test their skills and learn from mistakes they could have made in the actual work setting.

Fig. 3 - Start Screen for McDonald's Till Training program



RoboGarden

RoboGarden is a friendly game app that helps kids learn how to code. It provides practical, yet fun ways to code Blockly, JavaScript, and Python from scratch. Learners can choose different game options to choose from, such as missions, adventures, journeys, and even other worlds! The app provides rewards and immediate feedback on quizzes to help them become better coders. Since RoboGarden claims that they “can teach anyone coding,” you can try playing their “Hour of Code” game [here](#).

Fig. 4 - Screenshot of RoboGarden



Deloitte's Leadership Academy

Deloitte is the second largest professional services network worldwide. They taught over 50,000 executives in over 150 corporations using their online executive training program Leadership Academy. By incorporating premium content from Ivy League universities, like Stanford and Harvard, and gamification drives for motivation (i.e. leaderboards and reward badges), Deloitte found a 47% increase of learners returning every day and a 50% increase of learners completing the course.

Fig. 5 - Screenshot of Deloitte's Leadership Training



So is gamification useful for e-learning?

The answer is “yes!” Gamification can improve learning curves and make learning fun, especially for younger generations like Gen Z and Millennials. The best learning experience one can have is when he or she doesn't even realize it. Not only can it help individuals learn better with a subject, but they will find entertainment with its fun game-like experience and want to revisit learning again... and again.

LEVEL 2

Deliberate Fun: Know your audience and their motivations

Today I'd like to introduce you to this book called Deliberate Fun by Dr. Jonathan Peters. Interestingly, Deliberate Fun carries great content to help business owners understand the motivations behind different types of people.

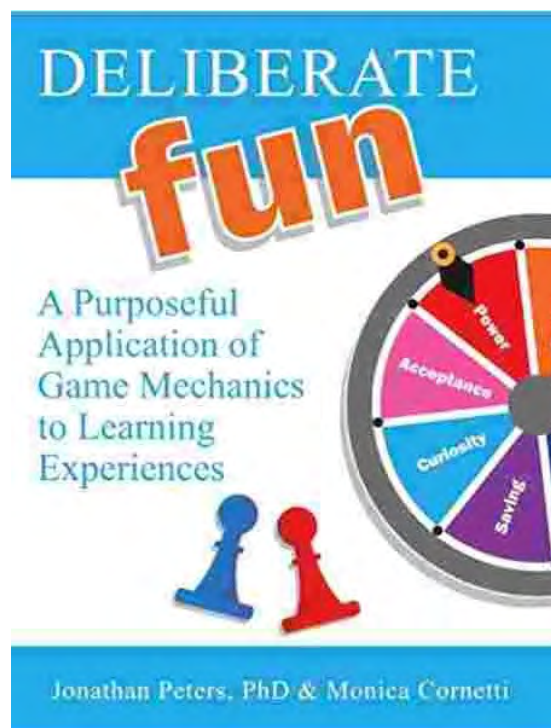


Fig. 6 - Peters, Author Jonathan. "Deliberate Fun – A Purposeful Application of Game Mechanics to Learning Experiences." Jonathan Peters, Ph.D. & Monica Cornetti, 2020.

“When we design for everyone, we end up designing for ourselves.”

– Jonathan Peters, PHD, Deliberate Fun, 2020

To produce successful gamification campaigns, or digital products altogether, Jonathan Peters emphasizes to ask yourself two questions.

1. Who is your target audience?
2. What are their motivations?

We are not the customer

We must first acknowledge that we are not our users. In order to go into a world of exploration about people's behavior patterns, we must empty our minds when we enter our problem space.

Personally, when I speak with my own clients and ask them who their target audience is, 9 out of 10 of them will say, "I target EVERYONE because my product is for EVERYONE." This is a dangerous statement and ultimately can lead to mistakes in the long run. Because designing for everyone ultimately means that you are designing for yourself. Everyone is unique. What interests and motives you will not always interest others.

For example, one of my favorite games to play is Final Fantasy. But my friend, however, prefers to play Call of Duty instead. Because we aren't interested in each other's hobbies, I'll most likely quit the military game within 3 minutes while my friend finds that playing RPG is more boring. That is why we need to be empathic.

When you're going into wondering about who your audience is, ask yourself: "Am I 100% confident about this?"

We must find what it is exactly that drives our users. According to research, 80% of gamification projects will fail due to users having a low motivation to play. Of course, this wouldn't satisfy any of the business objectives. So

here's the bottom line: don't focus on selling your products to everyone and start targeting the group that buys them. And ask yourself this big question... Who are our users?

Define Your Target Audience

To find our target audience, we can identify shared similarities between potential users. Despite people having their differences, we can narrow down to target a specific type of user we tend to attract. We can also clarify how we can motivate those users. This process calls for a strategy around attracting these users. *Jonathan Peter's idea of "self-hugging" & its assumptions will be the first step to create a great gamification experience for your digital products.

*Jonathan Peter's "Self-Hugging" method & its assumptions will be the first step to create a great gamification experience for your digital products.

"Self-Hugging: the concept that everyone believes everyone else has the same motivation as they have. This tendency causes us to create learning experiences that we enjoy, not necessarily what our learners will enjoy."

— Jonathan Peters, PHD, Deliberate Fun, 2020

Benefits for creating personas for your gamification campaigns:

1. Align business and user goals as one team for better company vision.
2. Visualize the potential user, or a human "face," to develop empathy for the person represented by research and demographics.

Create user personas

Personas help us understand our users better. We should have at least one persona in our minds and be curious about how they make decisions. To know who your users are, it's important to gather data by studying their motivations (i.e. values, interests, priorities, goals) and needs. We need to get to know our users deeply. You may also want to write a little bit about their background as well. Finding these attributes will help you really bring your persona to life.

Why do we do this?

According to Designing for the Digital Age, understanding who will buy and use your product is another important basic to doing business. It's a visual tool that helps us communicate the customer's viewpoint to our teams in a powerful, clear way. A great way to know if you have a good persona is if your entire team discusses it together in a well-understood manner.

“[Our users] may include the customers who make the purchase decision (as well as those who influence the decision), current users of the product or service, and potential users.”

– Kim Goodwin, *Designing For the Digital Age: How to Create Human-Centered Products and Services**

On Open View Partners' Youtube channel, partner Kyrie Robinson shares how to create an effective persona [here](#).

Here are some elements to identify a good user persona. Or in other words, make them more human:

- **Persona headshot:** A picture evokes a thousand words. Display an image of your user.
- **Name:** A name can reflect someone's race and living environment. Most often, you can use the first name only. By giving our persona names, we are making them more human. We can refer to our personas like, "David is really excited about X because he really feels motivated by Y."
- **Age:** Can reveal which generation he or she belongs to.
- **Gender:** Are you targeting a specific gender? This can make a lot of difference depending on different genders.
- **Geographics:** Location can dramatically affect a user's motivations and behaviors. People who live in a big city will behave differently from people who live in a small village.
- **Demographics:** Age, gender, ethnicity can impact some behaviors and attitudes. Age can have low effects for adults in the working class but can define the physical needs of those who are younger and older. A man's hand can be bigger than a woman's hand and both may have different experiences with handling a control device. And how people may perceive a specific situation may differ due to cultural beliefs/ differences.
- **Occupation:** Understanding the financial situation of your persona can demonstrate how much they are willing to spend. Doctors will have a higher income than truck driver, young students will be more hesitant with spending money than adults with jobs, etc.
- **Marital Status:** Since lifestyles between singles and married couples are drastically different, people who are single will have different behaviors than married people.

- **Family Structure:** Does the user have any children? Having a child naturally influences how parents think and behave. We can also project this to other family situations, like single-parent households, caring for grandparents, etc.
- **Hobbies:** Revealing the persona's hobbies can showcase that persona's personality. A person who loves to read will prefer to be alone than a person who loves to host social events.
- **Quote:** In summary, what could you imagine your persona would say? This is easy for people to empathize with quickly by just glancing at a quote.
- **Fears and Frustrations:** This helps the team to understand the possible pain points of the user in order to improve.
- **Brand:** A good brand can reveal the financial level and personal taste.

Persona Examples featuring Starshine (an AR science educational game)

Starshine is an AR science educational game that helps teenage kids to learn science in a fun way. Listed below, I'm sharing with you three personas created by the team at Hummingbirdsdays Design Studio.

User Persona:

Andy Cooper

Age: 10
Gender: Male
Location: Seattle, WA

Personality: ESFP
(Extroverted, straightforward, feeling, playful)

Hobbies: multiplayer games, riding his bike, cartoons



"How is homework important?"

Bio:

Andy is a bright kid but he is not focused during school. He struggles with sitting still and does not find what he is learning relevant to his interests.

Motivations:

Andy's parents force him to finish all his homework before he can play his video games or go to his friend's house.

Frustrations:

He finds schoolwork to be a chore. He is often scolded for moving around or letting his curiosity run wild so instead he clams up.

User Persona:

Laura Delsman

Age: 14
Gender: Female
Location: New York, NY

Personality: ISFJ
(Introverted, straightforward, feeling, structured)

Hobbies: reading fairytales, playing simulation games



"There are not enough experiments in class."

Bio:

Laura already knows that she wants to be a scientist some day. She is very independent but is also very shy.

Motivations:

Laura is looking for any available resources that will teach her more science after school.

Frustrations:

Most ways of getting ahead in her science classes include making her stand out but she does not like to present in front of others.

User Persona:

Eric Jang

Age: 17
Gender: Male
Location: Los Angeles, CA

Personality: INTJ
(Introverted, philosophical, thinking, structured)

Hobbies: brain training games, walking for exercise, puzzles



"Time is very valuable to me."

Bio:

Eric is a biology major in university. He is considering becoming a doctor, therefore he spends most of his time at the library to study.

Motivations:

Eric is always interesting in how he can take a break from studying while still doing something both relaxing and productive.

Frustrations:

Most of the scientific resources available to him are so dry and not visually interesting or rewarding for him.

Personas help us decipher specific content, goals, mechanics, and motivation that is required to develop our target audience. All three of Starshine's personas emulate different types of personalities and demographics, but all share this one concern, "I need to have fun while learning it." By observing these profiles, we can better understand how we can satisfy the users' needs.

Understand Your Target Audience's Motives

Source: Jonathan Peter's *Deliberate Fun* emphasizes Steven Reiss' book *Who Am I?*, particularly in the chapters "The 16 Core Desires" (69pg-179pg)

While reading *Deliberate Fun*, Peters introduces external concepts derived from his own research. A noteworthy mention was Dr. Steven Reiss' book *Who Am I?* which describes the 16 basic and universal desires that shape human behavior. It also shows how the human mind prioritizes these desires and how it influences one's actions and personality.

With the idea originated from Dr. Reiss, and emphasized again by Peters in

Deliberate Fun, here are the 16 desires that influence us:

1. Acceptance

According to evolutionary psychologists, human emotions and behaviors evolve in response to specific problems. For example, we often seek acceptance in our social circles to feel secure. If we imagine ourselves as a part of a family tribe, we could potentially starve to death or get attacked by wild animals if we are not accepted. One can avoid criticism, failure, and rejection by working towards getting positive affirmations. Those with a weak desire for acceptance are more self-confident and look for areas of risk, criticism, and feedback instead.

2. Beauty

If you are attracted to beautiful graphic elements and anything aesthetic, beauty is one of your strong desires. This group often prioritizes the look of the product based on its design rather than function. Plain designs or hard text with no imagery might lose their interest.

3. Curiosity

Curiosity embraces how much one enjoys the learning process. A strong desire for curiosity opens the willingness to go above their current knowledge and skills. Those with curious minds embrace learning new things to entertain themselves. They have a wide range of intellectual pursuits whether it's from thinking, reading, or having interesting conversations with others. These people can get bored easily

if they aren't expanding their curiosity. They also might behave as if they are smarter and make assumptions that others are equally interested in what they share.

4. Eating

A strong desire for eating entails consuming something delicious. One may need snack breaks throughout his or her process of learning and training. They may indulge and find themselves struggling to maintain a healthy lifestyle. People with low motivations for eating don't think about food all the time. Instead, they may grab a few bites of snacks before diving into their next task.

5. Family

Oftentimes, those who do not have families living with them, or personally feel like family isn't a huge drive for them, may work long hours to get the job done. Others will work just enough to pay their bills and maximize their family time.

6. Honor

Honor as a drive can come from values of respect, rules, and roles. People who define themselves under this category tend to be honest, trustworthy, and loyal. These folks feel very proud, and patriotic, in their own culture and heritage as well. They usually prefer a moderated learning environment like a traditional classroom setting where the teacher is the authority figure.

7. Idealism

Idealistic people fantasize about a perfect world. They spend a chunk of their time and money, and even risk their lives, to build a better version for our world today. With the passion to make the world a better place, you may find these people volunteering to help a good cause, donating money, or even just offering a helping hand to anyone in need.

8. Independence

Self-motivated people are highly motivated and are more motivated when there are independent prizes and they also rarely ask for advice. These types prefer to work individually than with a team. They also keep their opinions and thoughts to themselves.

9. Order

In our minds, we perceive having order as security. If there is a disruption with the order, there is a risk of death. Orderly people are motivated if there is a guaranteed expectation for stability. They value consistency and cleanliness. Those with a weak desire for order are generally more flexible and open to ambiguity.

10. Physical Activity

People with this desire love to be active. It may be difficult for them to stay still and focused for an extended period of time. Being forced to sit and listen to a training video, or any learning program could make learners feel bored easily.

11. Power

A desire for power leads to someone who is determined, willful, and assertive. A person with a heart for power will try to influence their will upon others and will dedicate their life to higher achievements. They believe that, in order to reach their goal, they need to conquer challenges.

12. Saving

Savers are also collectors. People who desire to save stay motivated when they can collect items, like badges, and they also have a fear of risking losing their collection.

13. Social Contact

People who crave social contact are motivated by socializing with their peers. They will go out of their way to connect with others in a friendly and outgoing manner. Social contact may drive this group to engage with asking questions, interacting with others, and getting feedback from instructors or program facilitators.

14. Status

Status-seekers care deeply about their prestige. They look for ways to level up, whether it's in their job title, position, or rank. Status-seekers also care about how they present themselves with their clothes, accessories, and even cars, to show off their position in society.

15. Tranquility

People with tranquility tend to look for safe environments. They avoid situations that can cause them to have anxiety, fear, and pain.

Tranquil people love to stay within their comfort zones and rarely branch out.

16. Vengeance

Vengeance as a drive gives people a competitive edge. They feel satisfied if they have won over someone more than earning a prize. People with vengeance do better when they get the opportunity to directly engage and compete with others.

With these drives, I also thought it was really interesting how Deliberate Fun also expanded on this by demonstrating player stereotypes, along with common motivators.

Richard Bartle, Ph.D. put players into 4 groups:



1. Achievers — players who have a strong desire to win



2. Explorer — players who are explorers with an interest to uncover new surprises



3. Socializers — players who enjoy interacting with other players



4. Killers — players who enjoy combat like shooting, killing, and destroying game subjects.

Nick Yee, Ph.D., defined 6 motivators in games:



1. Action – Destruction and excitement



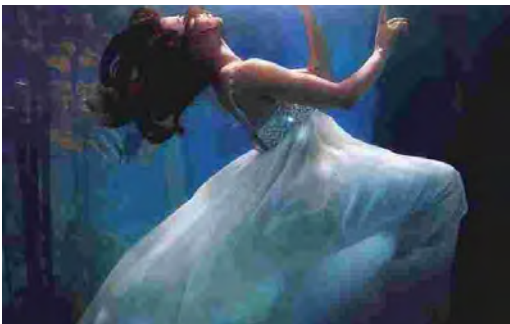
2. Social – Competition and Community



3. Master – Challenge and Strategy



4. Achievement – Completion and Power



5. Immersion – Fantasy and Story

6. Creativity – Design and Discovery

Many players have been categorized into their own specific groups, and they can be further divided into sub-categories depending on each person's direct motivation. First, develop a persona that can best represent your user/target audience. Second, define their motivations, asking: "What kind of game mechanics will motivate my users?"

Game mechanic examples:

- **Achievement** – Acceptance/Expedience/Power/Status/Vengeance
- **Attack** – Vengeance
- **Avatar** – Acceptance/Beauty/Independence/Social Contact/Status
- **Badges** – Acceptance/Power/Saving/Status
- **Levels** – Power/Status
- **Mentorship** – Acceptance/Family/Idealism/Interdependence/Power/Social Contact/Status

All in all, we can see that depending on the drives and motivations above, each person naturally responds to all elements differently. In order to discover how to create a good gamification campaign, or application, understanding your users comes first – and we highly recommend investing some research to find your target audience.

Thanks for reading!

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

Visit website



Citations

1. Chou, Author Yu-kai. "Octalysis: Complete Gamification Framework – Yu-Kai Chou." Yu-Kai Chou, 9 Oct. 2019, yukaichou.com/gamification-examples/octalysis-complete-gamification-framework.
2. Peters, Author Johathan. "Deliberate Fun – A Purposeful Application of Game Mechanics to Learning Experiences." Jonathan Peters, Ph.D. & Monica Cornetti, 2020.
3. "Planning User Research." *Designing For the Digital Age: How to Create Human-Centered Products and Services*, by Kim Goodwin, Wiley Pub., 2009, pp. 85–111.

