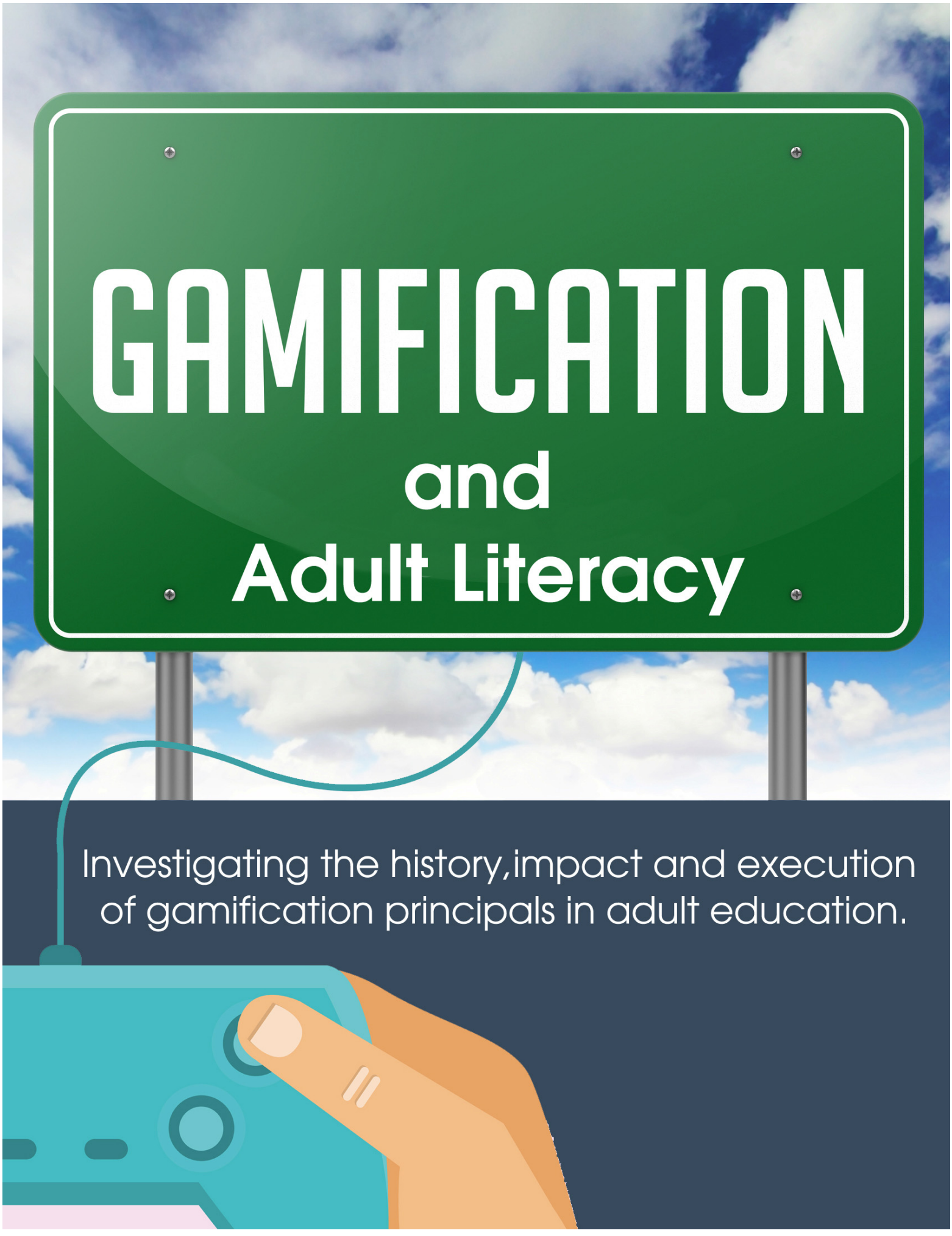
GAMIFICATION
and
Adult Literacy
Investigating the history,impact and execution of gamification principals in adult education.

Acknowledgements

This report was created as part of Literacy Link South Central's Job Creation Partnership Project "Using Technology to Facilitate Connections between Literacy and the Broader Community" (2014).

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Literacy Link South Central would like to thank:

The staff and learners at MSC's Adult Literacy & Essential Skills Program, located at Community Employment Services in Woodstock, for testing and providing feedback on the gamified typing activity.

The co-founders of the MakerBus, a volunteer-run pilot project to create a mobile makerspace and technology education classroom. Literacy Link South Central has been working closely with the MakerBus since its creation to develop innovative adult literacy modules that focus on emerging technologies and creative play.

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Executive Summary

This report examines best practices for incorporating gamification and game elements into adult literacy education. Based upon our research, we define gamification as, "*Gamification is the act of applying the game-design elements in a non-game setting in order to increase engagement, change behaviour, or achieve a specific, desired result.*"

The report begins by defining gamification and looking at the history of the term. We trace the origins of gamification from the sales and marketing worlds and its current uses in the world of education.

Understanding how to incorporate gamification in education comes from an understanding of the core drives that make games appealing. In order to understand these core drives, it is important to understand how individuals react to different game elements. One popular method of assessing how individuals react to game elements is the Bartle Test of Gamer Psychology. This method is examined and recommendations are made regarding how best to use this test in an educational setting.

We then look at examples of gamification from advertising, marketing, and education, concluding with an examination of two educational gamification projects in Ontario. The report concludes by offering 3 do's and 3 don'ts for using gamification and game elements in adult literacy education.

Organizational & Project Background

In 2014, Literacy Link South Central began a Job Creation Partnership project to explore how gamification techniques can inform literacy education and outreach.

Today more people than ever are playing games. A 2013 study showed that 58% of Americans play video games. Imagine how much higher this number would be if it included other forms of popular contemporary game playing such as board gaming, gambling, or even fantasy sport leagues. While there are few comprehensive studies of game playing in the United States, there is no data examining the number of total Canadians who participate regularly in game playing. One can only assume that if nearly 60% of Americans play video games, if all forms of gaming were taking into consideration, then the total number of game-playing Canadians and Americans would represent a significant percentage of each country's population.

In other words, we are interested in examining the educational value of gamification because we recognize that the majority of our society is involved in some form of gaming. Through this study we hope to test the hypothesis that since gaming is relevant to people's lives, then gamification must be relevant to education.

Introduction of Gamification

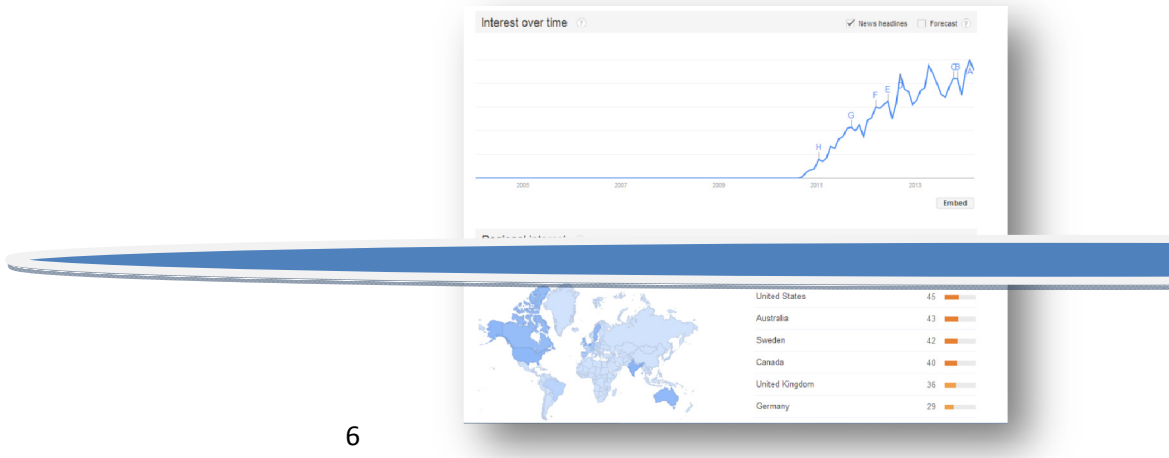
Defining Gamification and Rationale

> With gamification, "learning is not made into a game; the features of games (curiosity, collecting, exploration, and domination to name a few) which entice players to engage are used to draw in learners."
>
> **-Brian Arnold, 2014**

To begin the exploration of gamification we must pay attention to the increase of everyday gaming, or the instance of people playing games on a daily basis. In 2013, a survey found that Canadians who play video games are spending 21+ hours a week gaming (Vanier Institution, 2013). It is this rise in gaming that has compelled various sectors to learn more about why people are gaming and how they can leverage its popularity for increased engagement and marketing opportunities (see Figure 1).

Playing games can allow players to set and achieve personal goals, engage in social interaction and master new skills. Although games are challenging and sometimes operate within constrained systems, they encourage the gamer to develop skills while enjoying the experience. Gamification attempts to translate these concepts and apply them to non-game contexts. Some of these concepts include game elements like point systems, progress rewards, leaderboards, and feedback loops rewarding desired behaviour.

Figure 1



While gamification borrows elements from games it does not, or perhaps should not, simply turn tasks, lessons or programs into games. Gamification should involve selecting the best part of games and applying them to specific situations, continually motivating and rewarding users for their participation and efforts. When implemented correctly, gamification incentivizes desired behaviour and discourages undesired behaviour.

Based upon our research into gamification, we define the term as follows: *Gamification is the act of applying the game-design elements in a non-game setting in order to increase engagement, change behaviour, or achieve a specific, desired result.*

Game-design elements are factors that enhance a gamer's experience which consist of goals, rules, feedback and thrive off the gamer's voluntary involvement. A non-game setting can be anything outside of the traditional view of gaming. For this report, the non-game setting will be adult literacy and the gamers will be learners.

How to Gamify

Gamification is about process not features.

There is no explicit recipe for gamification and it has no set method in its endeavour to encourage play. That said, from many years of application we can say that to gamify is to understand the rules, know the users, and playtest throughout the process.

Understanding the rules of game design is important. One way to understand this is to play games. There is significance in finding the lows and interest points during the game experience. Also, reflecting on the competition and collaboration that occurred will begin to shape a greater understanding and appreciation of game design.

Gamification requires a fairly substantial amount of buy-in from users. If users aren't enjoying the game elements, they will not participate to their fullest extent. Knowing your users will determine what game elements will be emphasised and which ones will be avoided. For this reason gamification isn't a one-size-fits-all solution. While you can look to other examples of gamification for inspiration, it isn't guaranteed that one successful model of gamification will be successful with different users in a different context.

Getting gamification right requires creating prototypes and playtesting. Making prototypes of the rules and point system as early as possible to playtest and iterate on what is found during that process is key. In this early stage it's critical to think about who your playtesters are. Different audiences will react differently to your prototypes. Adults might give different feedback than youth. Literacy practitioners might give different feedback than literacy learners. All feedback is good feedback – think about testing prototypes with as diverse an audience as possible.

When designing gamified material, the process is as important as the final result. Through testing, reflecting, and adapting, you will learn through the creation process and gain a better understanding of both your material and of gamification itself. In many respects, gamification is more of an art than a science. It's difficult to simply apply a successful formula to produce a successful final product.

Game Design

Gamification can influence behaviour. In this section we'll examine how different types of game design are intended to encourage specific forms of behaviour.

Yu-Kai Chou, a self-professed gamification guru, has spent many years researching gamification and the drivers of it – unpacking and digging deep into games that are often seen as "addictive" (games like Farmville, Candy Crush and Diablo for example), meaning that they encourage players to come back to them time and again. Chou has developed a framework used to build and analyze strategies for gamification. This framework, called Octalysis, examines "addictive" elements in popular games, and looks at these elements' core drives and purpose. Octalysis has eight core drives:

Core Drives	Summary	Purpose
Epic Meaning & Calling	'This core drive is activated when your system inspires people and gets them excited about being part of a bigger purpose or plan.' (Chou, 2014)	It is important for users to find their meaning and calling to participate. When a user finds that drive, they are willing to spend their own time and effort.
Development & Accomplishment	'Gamification aims to bring that feeling of Development & Accomplishment into everyday experiences.' (Chou, 2014)	This core-drive is the most common form of integration. It consists of PBLs - points, badges, and leaderboards to show the users' progress. This format allows each user to compare and is fuelled by competitiveness and status.

Empowerment of Creativity & Feedback	'Almost every day we indulge ourselves in a multitude of "what if" scenarios that make our mind spin in all sorts of directions trying to figure out new and creative ways to improve or build something.' (Chou, 2014)	With options, users have a greater possibly to explore their task with creativity. To see immediate results of hard work is key to the user's ongoing struggle of continuing. Having to re-calibrate efforts over and over again or using their imagination is preferred by users.
Ownership & Possession	'Here, decisions are based on more logical, calculating thought and the desire for possession as the primary motivating factors.' (Chou, 2014)	This is based on the principle that the user takes ownership over their work. Users take care of their own work which they have improved and/or altered. Also, users like to receive recognition. Their work and/or progress act as tangible possessions.
Social Influence & Relatedness	"This drive incorporates all the social elements that drive people – including: mentorship, acceptance, social responses, companionship, as well as competition and envy." (Chou, 2014)	Users are driven to reach some sort of status within their community. PBLs help organize the user's community status and builds healthy competition. Tips and interaction further develops the sense of wanting to do more and continue the work already started.

Scarcity & Impatience	"Drives that emphasizes on the human desire and compulsion to strive and compete for things that seem unavailable in quantity." (Chou, 2014)	One way to build on the "I want" drive of the user is by using Appointed Dynamics. Appointing Dynamics is the restricting or limiting of users to certain objects or having a timeframe.
Unpredictability & Curiosity	"Revolves around the idea of consistently staying engaged because you are unsure of what's going to happen next." (Chou, 2014)	The expectancy that something might happen is more intriguing than knowing what's going to happen next when a user is active. This aids with the staleness that one might experience.
Loss & Avoidance	"It deals specifically with the motivating factors that help you avoid things you don't want happening" (Chou, 2014)	The fear of missing out (FOMO) occurs as the users know there's a chance of losing an opportunity, points or to level up.

These eight (8) core drives are game design elements that could be fused to applications to see increase of motivation and engagement. Let's now examine two instances of gamification to see how these core drives can be put into practice.

Mint.com is a popular money management application created in 2010 and attempts to make personal finances more fun by rewarding users with points for "good" behaviour. For example, if a user wanted to save money for a trip to Hawaii, the user would program a savings goal using Mint.com and the app would monitor how much money the user put aside each month, depicting these savings on a virtual progress bar. If the user makes responsible financial decisions (i.e. maintaining budgets, saving money, avoiding penalties), the app will send the user messages of positive reinforcement.

However, if the user makes irresponsible decisions (going over budget, spending too much money on frivolous purchases, incurs penalties), the app will send warning messages and will show how these decisions may impact the user's proposed vacation.

On a broad level, Mint uses development and accomplishment core drives to encourage users to make responsible financial decisions. Points and visual depictions of progress to reward desired behaviour. Loss and avoidance is the secondary core drive used by Mint. By showing how spending today influences tomorrow's savings goals, the app capitalizes on the user's fear of missing out. Know that an extra coffee each day might put a Hawaiian vacation at risk, encourages users to avoid unnecessary expenses.

In an educational setting, Mozilla has employment gamification techniques through their Open Badges initiative (http://openbadges.org/). Created in 2011, Open Badges is a free, online platform for designing and collecting badges that represent skills, education, and experiences. Peers, educators, and potential employers can view these badges, making them function as online credentials. Like Mint, Open Badges primarily uses the development and accomplishment core drive by rewarding users with visual tokens of their accomplishments. Unlike Mint, Open Badges uses the social influence and relatedness drive. This drive allows users to share and promote their PBLs inside of a community – this both recognizes users for their achievements and creates a healthy sense of competition within the community.

Not all core drives are appropriate for every project. While the development and accomplishment core drive is a great fit for Open Badges because it promotes and celebrates their community's achievements, it would be inappropriate for Mint because few users would want their financial habits broadcast to their social networks.

Game Design: Getting Gamification Right

While game elements can be added to any activity, not every activity should be gamified. Getting gamification right can be extremely challenging. Based upon our research and experience, getting gamification right comes from three ingredients: meaning, mastery, and autonomy.

Ingredients	Users' Understanding
Meaning	I do it to be part of the bigger picture.
Mastery	I do it to get better at something.
Autonomy	I do it because I want to do it.

Sebastian Deterding, an expert in gamification, focuses on playful and game-filled design and has identified three (3) key ingredients to gamification - meaning, mastery, and autonomy.

Meaning in gamification is about how to make the experience or activity connect with the user in a meaningful way – it is about connecting the user's interest, passions, goals, and curiosity. Within a gaming community, the user could establish status and build a reputation. Actual achievements are bragging rights to users. Most importantly, a big picture gives users meaning to all goals and achievements. Gamified activities simply will not work if users don't see or connect with meaning behind the activity.

Mastery in gamification is about how to make the experience or activity give a sense of progress or achieving something. Simply rewarding users with points based upon their progress is not enough to make users feel a sense of achievement. For users to feel a sense of mastery, the activity must be challenging, yet obtainable. Rewarding users for easily obtained tasks will make the points see arbitrary or even condescending. At the same time, if activities are too difficult, users will quickly become frustrated.

The core fun for users is the question, "Are we going to make?" answered by "We made it!" Mastery is gained through interesting challenges that encourage users to apply themselves. Mastery is derived from learned failure. While it is important to reward success, it is equally important to not stigmatize failure. Mastery after repeated attempts can be extremely rewarding. Keep in mind when incorporating game elements in educational experiences that failure is an important step on the pathway to mastery. Success feels more rewarding especially in multiple attempts and experience mastery. If there is variety, depth and complexity, the task won't all feel the same.

Autonomy in gamification compels users to continue an activity because they want to. This ingredient is critical in an educational environment because learning requires buy-in from the learner. This ingredient encourages users to learn, not because their teacher wants them to, but because they themselves want to.

This sense of autonomy can flow from the first two ingredients. If the activity connects with a user in a meaningful way, this can provide the impetuous to continue learning. Furthermore, if the user enjoys the sense of mastery they receive from an activity, this enjoyment can compel a user to continue learning.

The eight "core drives" identified by Chou can also contribute to a user's sense of . Before incorporating any game elements into an activity, ask yourself if these elements will help to compel a user to learn. Will badges help a user want to participate in an activity? Will creating a system of social influences create a communal desire to learn? Remember that gamification helps to shape a user's behaviours and decisions – consider how game elements contribute to a user's desire to learn.

The Bartle Test of Gamer Psychology

As we've stated before, gamification isn't a one-size-fits-all solution. To design meaningful gamified experiences, you will have to understand the audience you'll be

designing these experiences for. One method of learning about your audience's gaming preferences is through the Bartle Test of Gamer Psychology.

The Bartle Test of Gamer Psychology is an online multiple-choice assessment that generates the participant's gaming preference. The Bartle Test categorizes the gaming preference into 4 gamer types, Explorer, Achievers, Socializers, and Killers. The test is calculated from 30 questions and totals 200 points. Users are assigned a portion of those 200 points in each category, showing how much that category applies to their gaming preferences.

The Bartle Test may not be appropriate for every audience. It's questions focus on scenarios common in Massively Multiplayer Online Role Playing Games (MMORPGs). As a result of this influence, the test uses language (like "loot" and "role playing") that may not be familiar to all users. If you intend to use this test, consider facilitating a pre-test activity that introduces users to some of the potentially unfamiliar language they might encounter in the test.

Aside from a few potentially unfamiliar words, the questions are generally straight forward, asking things like, "Would you rather be loved or feared?" or "What is worse, to be without power or to be without friends?" The test itself is gamified as it provides small, humorous comments each time the user answers a question. These comments are intended to make the process of answering a 30-question test more enjoyable.

Bartle Test Gamer Types

Each of the four gamer types in the Bartle Test reflects a different learning style. Knowing which categories your learners fall into can be helpful when deciding which game elements to include in an activity.

1. Explorers: Explorers love wandering and discovering things about their environment in the game world. Outside of the game world, they're the ones who have a stronger desire to learn more. Explorers love to figure out how things work and take pleasure in sharing their findings with others. You'll often find that explorers are filled with specific knowledge or "fun-facts" that they are bursting to share with others. Because of their love of discovering how things work, they often respond well to games to well-define rule sets or mechanics.

2. Achievers: Achievers are the point-oriented gamers who enjoy being at the top of the leaderboard or being the first to finish a game. Outside of the game world, achievers place importance on grades and their standing in a class or social group. Achievers are often detail oriented and take pleasure in completing their work in the "fastest, quickest, shortest" fashion. Many achievers feel the need to be recognized for their achievements and can act out if they feel ignored. These learners can be competitive and may not see the value of a game unless there is a clearly defined winner.

3. Socializers: Socializers, in the multiplayer online games, are the connectors. They form teams which as known as clans. Socializers gather like-minded gamers to act together in a quest. Their success comes from everyone's feedback. Outside of the game world, Socializers seek for meaningful interaction and relationships and their motivation derives from that. Unlike Achievers who view winning as the goal of a game, Socializers often view gaming as a way to make friends. As learners Socializers often enjoy the responsibility of organizing a game since they have the opportunity to interact socially with their peers.

4. Killers: While Achiever take pleasure in the act of winning, Killers tend to enjoy the act of defeating an opponent more than the act of winning itself. Because winning is often secondary to the game itself, Killers often are not discouraged by failure and tend to take bolder chances in games. Outside of the game world, Killers are generally risk takers. As learners Killers are extremely pragmatic in their value of knowledge – if they see knowledge as having a direct application that is important to them, then Killers will work hard to obtain that knowledge. They can be hard to control, though once drawn to being part of the community, the results will be rewarding.

Many gamification experts and practitioners use the Bartle Test because knowing gamer types can aid in designing gamified activities that resonate with specific learners. For example, many Explorers enjoy trivia-based games because they value discovery. On the other hand, Killers tend not to see the practical value in learning trivia since it often has little relevance in what they perceive to be the real world.

Very few people will fall entirely into one of the four types, but having rough idea of which of the four types your learners most identify with provides valuable information when designing gamified activities.

Badges, Rewards and Points

Gabe Zichermann, an author and entrepreneur, originated the idea of a "Gamification Loop." A gamification loop is a challenge-achievement-reward loop that Zichermann argues promotes dopamine production in the brain, reinforcing our desire to play a game. He argues that by paying attention to how our brains respond to the stimuli of game elements, it is possible to craft extremely compelling gamified activities.

The following chart depicts Zichermann's gamification loop:

Challenge tells the users what they need to do to win. Users then play the game until a *win condition* is achieved. If the user does not achieve the win condition, the game either ends or begins again and provides another opportunity to achieve the win condition. Once the win condition is achieved, *rewards* are given to the winning user or team. These rewards can take the form of points, praise, or a tangible reward. If points are rewarded, these points are gathered and shown on a *leaderboard*. *Badges* are another form of reward and are granted to users as a symbol of their accomplishments. The points and badges are combined to indicate the users' status within their community.

The status is emphasised by sharing badges and leaderboard position over a social network or within a social community. By seeing the status of other users, new and existing users are drawn to the activity and the loop begins anew.

Two features characterize Zichermann's gamification loop: constant positive feedback and social pressure. Each step in the loop provides users with positive feedback designed to release small amounts of dopamine in the users' brains. In theory this feedback loop creates a connection in the users' brains with the activity and positive feelings. Users return to the game to experience this positive feeling. If we think of gamification as a way to influence an individual's behaviour, then Zichermann's gamification loop is a prime example, since it attempts to capitalize on brain chemistry to change emotional connections between individuals and activities.

Zichermann's gamification loop can be criticized for placing too much emphasis on rewards. There is more to gamification than points, badges, and leaderboards. People play games because they are fun, because they are challenging, because they enjoy the social aspect of gaming – the reasons that people play games are complex and shouldn't be boiled down simply to reward mechanisms.

So if Zichermann's gamification loop is overly simplistic, why include it in a discussion about best practices for using gamification in education? While Zichermann does take a narrow view of gamification, he gets one thing absolutely right – gamification won't work if people don't enjoy the game elements. Every single game element used in a gamified activity should serve a specific purpose. If you assign points for an activity, think about what behaviour you're trying to encourage. Does someone need to 'win' an activity for it to be effective? Could including a leaderboard discourage some students from trying?

Zichermann's gamification loop can be one extremely effective form of gamification that can influence users to return to an activity time and time again, but it is far from the only model of gamification. When assessing methods of gamification, be cautious of any one-size-fits-all solutions.

Applications for Gamification

Gamification and game elements are used in nearly every sector of modern society. Schools, banks, and even government organizations have shown an explosion in the widespread use and adoption of gamification in the past 10 years. In 2014 nearly 70% of all Global 2000 companies (a global ranking of the top 2000 publically traded companies) have at least one gamified initiative (Huang, 2013). This section will examine how game elements are being used in marketing, health and fitness, and most importantly, in education. As you'll see there are a lot of similarities in how these vastly different sectors employ game elements.

Gamification of Marketing

Many think that the gamification of marketing is about loyalty points or frequent shopping. But modern marketing goes beyond flyer miles and optimum points – simply handing out rewards for shopping won't address marketing gaps and sales decreases. Instead, many companies are using gamification to engage and retain their customers – turning shopping, advertising and loyalty into a fun and exciting activity. Although loyalty programs reinforce and reward consumers for good (in this case, profitable) behaviour, smart marketers are going a step further and are using the addictive game mechanics, advanced technology and the idea of loyalty programs to further drive brand faithfulness and engagement.

People are constantly being marketed to through gamification, usually without realizing it. In some cases, gamification campaigns are so successful in making advertising fun that many consumers actually enjoy being a part of it. Gamification has quickly become a key marketing strategy for companies around the world – but many gamification experts warn that simply adding badges and rewards for website visits, purchases and sharing isn't enough, marketers need to make things personal, engaging and fun.

When done correctly, gamification enthusiasts claim "gamification can lead to a 100% to 150% pickup in engagement metrics including unique views, page views, community activities, and time on site." (M2 Research, 2014)

Contemporary marketing strategy requires organizations to relate with their customers more consistently and authentically to gain quality insight on developing winning products and services. As a result games now serve as an "invaluable change agent" (Ryan, Sleigh, Soh, & Li, 2014) for corporations to meet these demands. The Gartner Group, an IT research and advisory company, predicts that by the year 2015 the vast majority of the biggest enterprises in the world will be relying on gamification, predicting that 50% of all innovation for these enterprises will be the result of playing games. (Gartner, 2014)

Using gamified approaches and techniques is a powerful strategy for companies to market the sale/use of their products. The examples below exemplify inventive game design, while producing happily engaged users who are subsequently willing and excited to share their experiences with their family, peers and social networks.

McDonald's Monopoly Contest

McDonald's began using gamification well before the self-professed gamification gurus and experts of today. In fact, McDonalds has been using gamification to drive sales and customer engagement for over 25 years – through a partnership with the toy and game company Hasbro, McDonalds has been playing the 'famous' Monopoly game since 1987.

This famous example of gamification became popular and as well known as the McDonald menu itself where thousands of people play daily on and offline. "McDonald's consumers have admitted to going to eat there every day to collect tokens for the Monopoly board, and so, like many good games, it seems it can be as addictive as the food itself." (Adamou, 2014)

The appealing combination of inexpensive fast food and the chance of winning $1 million, cars, gift cards and even more inexpensive fast food is undeniably appealing.

Core drives used:

- *Loss & Avoidance*
- *Unpredictability & Curiosity*
- *Scarcity & Impatience*

Magnum: Pleasure Hunt

Knows as an “advergame,” a game design to promote or advertise a product, the Magnum Pleasure Hunt campaign that took users on an online scavenger hunt through twenty well known websites as to find and collect “bon bons,” the special ingredient in the Magnum Temptation Hazelnut ice-cream. Players who were able to find 100 bon bons were eligible to win Magnum Ice-cream products. Targeted towards women aged 15-44, the Magnum Pleasure Hunt allows the users to move a virtual avatar across a number of partnered websites, advertising both for Magnum Ice-cream and for partnered brands. At the end of the game, users could see their scores on a global leaderboard.

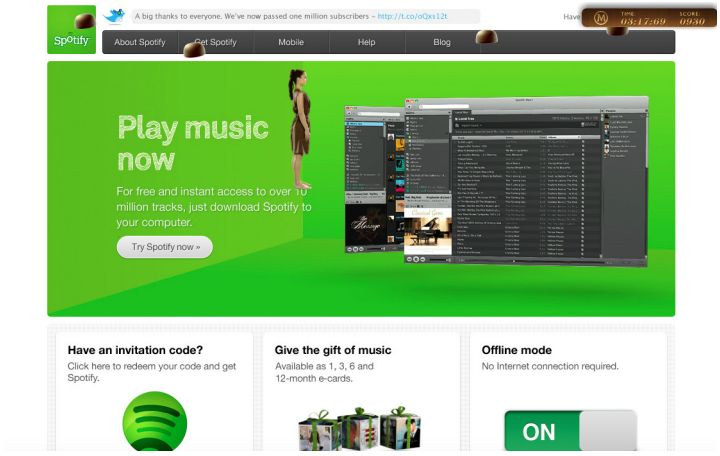


Image from Magnum Pleasure Hunt. User can move the avatar across the screen to collect the bon bons

Core drives used:

- *Unpredictability and curiosity*
- *Empowerment and accomplishment*
- *Social influence and relatedness*

Samsung Galaxy S4: Stare Down

The setup was simple – marketers put a kiosk in a train station, and all users had to do was look at the phone for an hour. Blinking was allowed, but users absolutely could not look away from the phone. Easy, right? Sure, but the players/customers had to avoid outrageous distractions such as barking dogs, bickering couples, hot dog vendors and motorcycles as a crowd gathers around. Videos of users attempting to stare at the phone for an hour were put on YouTube to further advertise the product/campaign.

This campaign took an everyday act, looking at an ad, and transformed it into a captivating experience that riveted users and entertained online audiences. Often the simply act of making an everyday activity an endurance challenge can be enough to make for a compelling gamified activity.

Core drives used:

- *Empowerment and Accomplishment*
- *Social Influence & Relatedness*
- *Unpredictability & Curiosity*

Finding the motivation to get in shape and take better care of our health can be exhausting in and finding a fitness plan that suits our individual goals, abilities and schedule can be an even more arduous task. Gamification in health and fitness seeks to address these concerns by assisting people with setting, reaching and maintaining their health and fitness goals. The gamification of health and fitness is a booming business.

Gamification can promote health and wellness through a variety of mechanics and dynamics, which are traditionally only seen in 'games' – computer, board and others – and include badges, levels, leaderboards, real-time feedback and challenges and quests. Additionally gamification can introduce peer or social influence, an integral motivator of maintaining fitness needs and goals. The ability to complete tailor-made challenges and then (when ready) see how you measure up to other players, not only incentivises working out, but encourages mastery and the drive to increase skill level and push the user to try things they may not otherwise would have.

Adding game dynamics and competition to fitness and health has proven to be an effective tool in mobilizing people to take control of their health and has created platforms to give and get support, create challenge and mastery, and ultimately assist people in reaching and exceeding their goals. Below are examples of successful, popular gamified health-related platforms.

Fitocracy

Labeled a health and fitness social network, Fitocracy seeks to empower people of all ages and skill levels to succeed in their fitness goals. Fitocracy combines engaging workout routines with addictive gamification elements that make fitness more fun. Users can earn points for their achievements, unlock new workouts, and track their progress while receiving support an encouragement from the Fitocracy community (aka Fitocrats).

Plugging into the social motivator of reaching fitness goals, Fitocracy has a 'Team Fitness'. This online, personal fitness group is led by the 'best coaches in the world'. Team Fitness allows the user to select a team based on their goals, and a nutrition and fitness plan is automatically tailor-made.

Core drives used:

- *Social influence and relatedness*
- *Empowerment and creativity in feedback*
- *Ownership and possession*

Nike+

Nike+ links running directly to gamification by giving runners answers to questions like:

- How fast am I running and am I progressing?
- When do I lose momentum when I am running?
- How many calories do I burn while running?
- How are my friends performing and what does it take to beat them?

In addition, Nike gives software developers open access to this data. This Nike+ Accelerator initiative encourages people to build companies to leverage the data generated from Nike+ digital products.

Nike has made an engaging gamified platform where runners can interact with each other, share their data and learn from the insights derived from it. Since the launch in 2006, the platform has built a user base of 7 million runners. Think of all the data this generates and the insights it provides to Nike.

Core drives used:

- *Social influence and relatedness*
- *Empowerment and creativity in feedback*
- *Ownership and possession*

> "You create these communities around the game that do an incredible amount of intellectual work, and when they're done with the work, they will leave the game and go to another game that's more challenging. Can you imagine if we had that kind of environment in classrooms?"
>
> ***– Constance Steinkuehler Squire, Associate Professor in Digital Media at the University of Wisconsin-Madison***

The gamification of seemingly every aspect of society creates an expectation for many learners that their education will include game elements. Contemporary approaches to education must consider engaging students, stimulating their interests, retaining their attention, and maintaining a positive attitude - all in a nurturing, flexible environment.

"Many of today's students have spent their formative years learning through mediated experiences, such video games, online environments, and social networks." (Tulloch, 2012) These experiences have challenged the current pedagogical system and today's schools are confronted by major problems around student motivation and engagement. (Lee & Hammer, 2013) Gamification has the potential to address and solve some of the current gaps in student engagement. Tulloch (2012) argues that "rather than dismissing the significance of this [gamification] or trying to train students out their 'bad habits', there is the opportunity to embrace the pedagogic potential of these systems. "

Gamification's value for the educator and learner is compelling: improved problem solving and collaboration skills, higher learner engagement and greater knowledge retention. The gamification of education allows us to encourage learners' desire to develop and master skills. Imagine a truthfully addictive game, where the more time you spent on it, the more information you learned and the more productive you became. Imagine the same game being uniquely suited to your learning and gaming style, allowing you to move and play anyway you like and connecting you to other players that learn and play the same way.

You would learn more, achieve more, and become more interested and motivated to learn. Ultimately, educators are hopeful that gamification can derive "all the fun and addicting elements found in games and [apply] them to real-world or productive activities". (Chou, 2014)

Linked with the increased gamification of daily activities is the increased commonality and sophistication of video games. While many educators view video games simply as a distraction, many contemporary games are a highly complex, rich medium that employ highly sophisticated systems to train players (students) and encourage them to develop highly specialized, specific skills (Tulloch, 2009). Contemporary video games have the potential to explore complex emotions, meticulously recreated historic worlds, and offer training in real-world skills. With the rise of independent video game studios in the past decade, contemporary video games have the potential to be more intellectually-stimulate and diverse than at any other point in the history of the medium.

More and more, teachers are bringing video games into the classroom as teaching tools. Minecraft (2009) is a popular video game that empowers users to create their own game worlds with simple, user-friendly, and powerful creation tools. In the autumn of 2013 Google launched a partnership to use Minecraft to help teach the next generation of quantum physicists. (Hunt, 2014) qCraft is a partnership between Google, Minecraft.edu, and quantum physics lab at the California Institute of Technology to give learners hands-on experiments with quantum physics. Using this add-on pack for Minecraft, players can play in a quantum physics sandbox, using a physics simulator to observe and test complex theories like quantum entanglement, superposition, and observer dependency. (Hunt, 2014) One reason for Minecraft's popularity is that user are given free-reign to play, building whatever they imagine either through online collaboration or solo play.

qCraft sees the value of this type of unstructured play, using it as a way to get learners interested in new concepts, empowering them to be their own quantum physicist.

In recent years, the genre of so-called "empathy games" have gained prominence among educators. These games ask users to temporarily inhabit the lives of individuals facing complex moral decisions, promoting an increased sense of empathy in the user. An example of an empathy game is *Papers Please* (2013). In this game, users play as a border guard in a fictional Soviet country during the Cold War. Users are charged with checking the documents of potential immigrants and rejecting applicants who do not meet the government's requirements. Users are regularly confronted with difficult moral decisions, like, "Do you allow someone in the country to visit a dying relative even if they don't have the proper paperwork?" If a user makes a mistake and is caught letting someone through who doesn't belong, they can be fined, reducing how much money they take home to feed their own family. This creates a difficult balance between doing what is right and doing what is required to protect one's own family.

A screen-shot from "Papers Please"

Empathy games like *Paper Please* encourage learners to grapple with difficult moral decisions and can be used to inspire debate and discussion.

Increasingly educators are recognizing the social and emotional importance of games. In addition to its capacity to develop important and precise skills, gamification can also affect students' emotional experiences, their sense of identity, and their social positioning. "Disengagement from school happens at the social and emotional levels, problems exacerbated by the formal rules of school." (Rock, 2004) Gamified learning processes also allow student to connect with other students they may not usually connect with, broadening their social and educational networks.

Gamification can address student disengagement through tailor-made challenges and activities, decreasing distraction and the frustration of not "keeping up." Providing opportunities for students to gain points or badges for additional, optional tasks, allows students with diverse learning styles to engage in a way that is appropriate for them, equalizing opportunities to learn. As suggested by Leblanc (2006), this can motivate students to participate more deeply and even to change their self-concept as learners. Holistically created gamified experiences have the capacity to involve learners with different learning styles in different roles. Students who fall into the "Socializer" type can act as group facilitators, working with different team members to achieve a shared goal. Explorers can be given the responsibility of designing game systems and creating game rules. Killers can be given the responsibility of acting as team captains, using their competitive natures for the betterment of their team.

Gamification of Education Examples:

Duolingo:

Winner of Apple's "App of the Year" and Google Play's "Best of the Best", Duolingo provides free online language education. Combining language learning and a crowd-sourced text translation, Duolingo was created to allow learners to develop new language skills while collaborating with other users to translate websites and documents. "Beginners start out with basic, simple sentences from the web, while advanced users receive more complex sentences. As one progresses, so does the complexity of the sentences they are asked to translate." (Chou, 2014)

Adding to the social environment Duolingo provides the user, each student can also vote on the quality of the other students' translations, and provide important feedback for understanding and learning. The top rated translations for each sentence are made available for public viewing and collection.

The site also includes skill points, time-based elements and bonuses for answering questions in a pre-set time limit. Consequently, incorrect answers result in a loss of points and delay of levelling up. This innovative system is adaptive, tracking completed lessons, translations, tests, and practice sessions, providing feedback to the student while planning future lessons assignments to better address their individual needs.

Core Drives Used:

- *Development & Accomplishment*
- *Empowerment of Creativity & Feedback*
- *Scarcity & Impatience*

ClassDojo

"ClassDojo is a classroom tool that helps teachers improve behaviour in their classrooms quickly and easily. It also captures and generates data on behaviour that teachers can share with parents and administrators." (Class Twist Inc, 2014)

ClassDojo allows teachers to give students real-time feedback to solve some of the most time-consuming problems facing teachers, something some teachers spend more than 50% of class time on: improving student behaviour. It engages parents and students to improve behaviour at home as well.
The company is defining and owning the "other half of education," the half that goes beyond building good test scores, to building good character strengths. (Crunchbase, 2014)

Core drives used:

- *Epic Meaning & Calling*
- *Empowerment of Creativity & Feedback*

Goalbook:

The disconnect between group-based teaching and individual learning is addressed by Goalbook, which hopes to produce for every student a single, shared learning plan.

The alternative, parent-teacher conferences and counsellor meetings, is totally out of date, and simple social networking tools can improve the situation significantly, in their opinion. Instead of a file in a cabinet somewhere and a few notes jotted on attendance sheets or classwork, every student is a node in a network of educators, administrators, and parents. A database of goals, strategies, and so on will be used to create a recommendation engine for helping students. They're launching in a number of Bay Area districts and private schools.

Core Drives used:

- *Empowerment of Creativity & Feedback*
- *Social Influence & Relatedness*

Criticism of Gamification

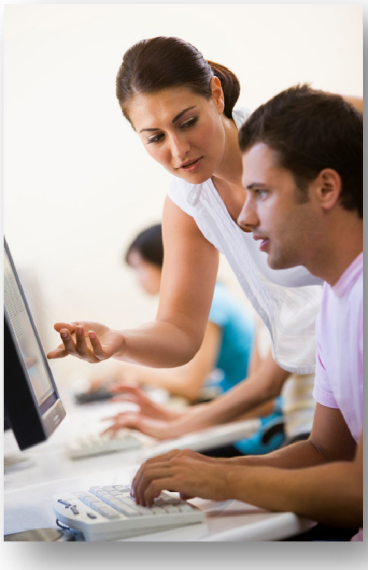
Like its growing popularity, criticisms of gamification and its use is on the rise as well. Many critics suggest that its popularity and seemingly simple approach invites everyone to apply gamification strategies to their existing marketing ploys or programs - but this doesn't mean they are doing it right. "Game mechanics alone don't make something boring more interesting. Gamification has become the new lipstick on the pit bull." (Guru Digital Arts College, 2011) In other words, critics of gamification believe that game elements are merely window-dressing designed to make poorly designed curricula seemingly more interesting. This view presents gamification as a fad, something seen as a method that's sole purpose is marketing and driving sales.

People are motivated to play games not for arbitrary points and rewards, but for the thrill of the gameplay itself, its aesthetics, the sense of fulfilment and achievement gained when challenges within the game are overcome, and for captivating and immersive storytelling. Successful gamification strategies must go beyond adding points, levels and rewards - otherwise a blank screen that invites the user to repetitively click a single button to earn points would be the most exciting and popular game in the world.

Other critics argue that school should be seen as a place for work, not play; and any game that tries to prescribe learning goals will most likely fail to engage. Games should not be used to try to incentivise learning, or reward pupils and students for their knowledge of a syllabus – such games will quickly lose any appeal they have. Rather, educational games must enrich the learning process through storytelling, inventive challenges and fun. What game-based learning needs is not reused marketing gimmicks, but imaginative designers with an understanding of teaching, ready to find innovative ways of making educational subjects exciting and engaging as games.

And even with all the benefits gamification has to offer educators, many of these critics are true. It is very easy to incorporate game elements into curriculum poorly. Game elements are not inherently entertaining or inherently educational.

For gamification to be effective, game elements must be incorporated into educational activities with care, reflection, and purpose. By focusing on the essential elements of gamification, core drives, and learner types, educators can begin to design gamified curriculum that makes meaningful impact in the lives of learners.



Adding play to education is a way to motivate, engage and inspire learning. Injecting social and competitive aspects to educational activities can assist the learner with retention and encouragement. However, simply adding points and levels to math or English modules does not constitute a game. Creating games for adult learner poses additional challenges in the attempt to 'gamify' education. Adult learners have vastly different reasons for engaging in learning, and one must see immediate and tangible benefits to playing games in educational settings.

Through research and our own experience with educational play, we have developed a list of recommendations for those wishing to 'gamify' or inject game dynamics into an adult learning environment. This list is, of course, not exhaustive but rather provides a general guideline for gamifying adult learning

Pre-game Assessment

Assessments are integral in understanding how learners play and allows educators to select activities and games that suit the learner's gaming style. By tailoring activities to a learner's unique learning style, educators can increase engagement and learner buy-in. This assessment is also a benefit to educators, allowing them to customize learning activities and ensure the support they provide is appropriate and effective.

Many adult learners can be sceptical about the idea of playing games as a form of education, seeing games as inherently childish. Pre-game assessment can make educators aware of these preconceptions, giving the educator time to build learner by-in and trust. Interestingly even if some adult learners play games in their daily lives (games like Sudoku or computer Solitaire), they still might be sceptical about the educational value of games. These attitudes cannot be changed overnight, but can be altered with time and trust.

In pre-game assessments, Bartle's Test of Gamer Psychology, as previously described, can be a useful diagnostic tool.

Feedback - Immediate and Juicy

Some games provide constant encouragement and immediate results to engage the user throughout the game and in between levels – in game design this level of feedback is often called "juicy feedback." (Rose, 2011). For many learners, juicy feedback can be a good method of creating comfort and engagement.

Juicy feedback celebrates achievements and reduces consequences of failure by applying game-like rules to education. Think of your favourite video game – in most classic video games, failure is made into just another step in the learning process. Take the classic block-stacking video game Tetris, for example. In a single session of Tetris it is normal to fail a number of times; but each time the player fails, they become a slightly better Tetris player. High scores provide immediate juicy feedback, rewarding the player's progress. This creates a feedback loop that makes failure an essential part of the learning process.

To incorporate juicy feedback in an educational setting, think about ways to focus on successes rather than failures. One way to do this is to shift from offering a single large reward to offering a number of smaller rewards. Rewards can take a number of forms – grades, praise, leaderboards, and points can all be considered rewards. If you only have one form of assessment (like an end of term exam or paper), then learners only have one chance to receive a reward. This makes failure considerable more intimidating because learners see themselves as only having one chance to "get it right." By using a number of smaller activities for assessment, learners have multiple opportunities to succeed. If a learner doesn't do well on one activity, they know that they have many more chances to receive positive feedback.

Just as Tetris offers players as many chances as they want to achieve a high score, so too should educators offer learners as many opportunities as they need to feel successful.

Meaning

Adult learners are different from child or youth learners in that they are less exploratory and are (usually) engaged in learning for specific reasons. Games must connect to the reason they are back in a learning environment in the first place (information that would be gathered during intake and initial assessment).

Context

Adults have developed and maintained a certain lifestyle or culture and the games and activities must reflect the context in which they live. For example, if a learner is navigating a "world" that they aren't used to or haven't experienced before, they will have difficulty relating their gaming experience to real life. Furthermore, they will have difficulty recognizing and translating the learning to everyday life. If learners do not understand the context of what they're doing, many will become frustrated, seeing the activity as meaningless. Building trust with your learners can help to reduce this frustration.

Levels

This is fundamental to the gamification process - allowing learners to progress through activities that progressively increase in difficulty (after they have mastered previous level's skills). This allows the learners to gain confidence as they progress and apply new skills to future levels. In addition to this, games may want to incorporate unexpected challenges (like bonus rounds, power-ups, or lightening rounds) to keep the player engaged while allowing them to 'test' out the skills they are developing in a particular level.

Privacy

More of a benefit than a recommendation, but creating a safe space where the learner can attempt and fail without an audience is key for the gamification of adult literacy. Many adult learners can feel self-conscious about not knowing how to do something. If these learners feel that they have an audience for their potential failure, or pressure to perform, they might shut down and reject the engagement of the activity. Privacy also provides learners to be creative and explore alternatives that don't result in consequences or real world repercussions.

This can be achieved by breaking larger groups of learners into smaller groups, or even challenging learners individually. Be aware of learner privacy issues when introducing unfamiliar technology. Many adult learners are intimidated by new technology and need space and time to explore the technology on their own before using it in front of a group.

Self-Direction

In addition to privacy, adult learners can benefit from having freedom to choose first whether to participate, and then how to participate in a gamified activity. Creating a game or activity that is self-directed, voluntary, and creates a space where exploration and experimentation is not only allowed but promoted, encourages the learner to explore and gain knowledge at pace they are comfortable with.

Social

Most supporters of gamification would argue that a key component to gamification is to introduce social components - or opportunities for learners to engage with other learners. Incorporating these opportunities allows learners to compare their progress with others and participate in healthy competition.

This recommendation must be voluntary however, and introduced after the learner has gained confidence and comfort in the flow of activities. Introducing 'competition' too soon can deter learners and can compromise the autonomous nature of the activity.

Examples of the Gamification of Adult Literacy in Ontario

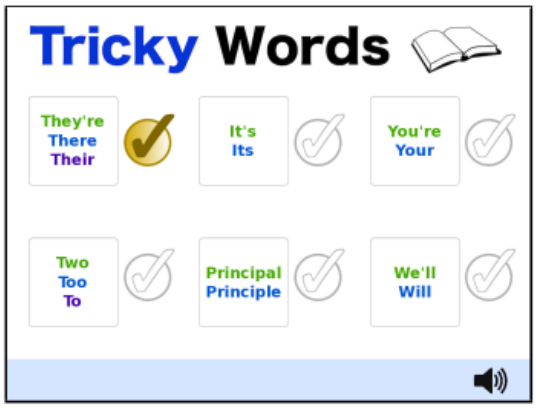
Since the gamification of education is a relatively new practice, there are not a large number of examples of the gamification of adult literacy in Ontario to draw upon. This section will highlight several key examples and develop a set of recommendations for literacy providers who are interested in gamification.

Anne Hill, a researcher and professor, at Fanshawe College in London Ontario, has been exploring gamification as a method to help learners with developmental disabilities to improve their reading and writing skills. Hill believes that the best way to encourage anyone to improve their reading and writing skills is to have them read and write regularly (Beach, 2012). Using game elements like point systems, leaderboards, and juicy feedback, Hill encourages her learners to read at least 30 minutes every day (Beach, 2012). Learners are asked to read books in which they understand 90-98% of the content, and incentivizes regular reading through gamifying the reading process (Beach, 2012). Each learner is given a personal leaderboard and personal milestones for the total number of books they read. Every day they complete 30 minutes of reading, the advance one step on their personal leaderboard (Beach, 2012). This advancement is an example of juicy feedback in that it provides leaners with constant positive reinforcement for their daily reading.

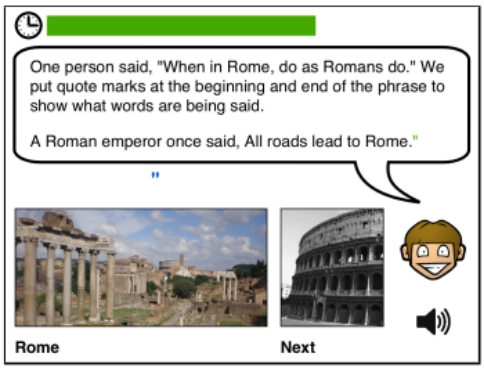
The Brant Skills Centre is a not-for-profit organization that provides adult literacy education in Brantford, Ontario. In 2013, the Brant Skills Centre developed two tablet applications using contrasting gamification approaches that were designed to help adult learners improve their basic literacy skills (Browne, 2014). Adult learners were given the opportunity to test the apps and provide their feedback about which approaches they found the most engaging. The two apps were designed to engage adult learners at varying levels of literacy, focusing on two problem areas identified by Brant Skills Centre: homophones and punctuation. (Browne, 2014).

Both apps were designed to test a different model of gamification. The homophone app was designed to motivate user behaviour; the punctuation app was designed using engage users in focused learning. (Browne, 2014)

Title screen of the homophone app



The homophone app focused on "tricky" words. On the title screen, users were given the option to select which of the six homophones they would like to learn about. (Browne, 2014) As users correctly complete the exercises in each category, they are awarded one green check mark for each correctly completed exercise. Once all five activities in each category have been completed, users receive a gold check mark for the category. (Browne, 2014). Users can tap on each homophone to hear audio recordings of the word used in a sentence. To complete each exercise, users have to use their fingers to drag the correct word into the sentence. (Browne, 2014)



The punctuation app was designed to teach how and when to use punctuation to end a sentence, focusing on periods, question marks, and quotation marks. (Browne, 2014) Unlike the homophone app that begins with a title screen, the punctuation app begins with an animation showing a hand dragging a period to the end of a sentence. This signals to the user how to interact with the game. Users are presented with a number of sentences and a number of different punctuation options, and are given a limited about of time to correctly punctuate each sentence. (Browne, 2014) By limiting the amount of time users have to complete each sentence, the app makes a relatively un-engaging task (punctuating sentences) more challenging, and therefore, more engaging.

The punctuation app uses a gamification method called the "design approach." The design approach creates a focus on intense game experiences that are intended to increase concentration. (Browne, 2014) By limiting the time that users have to complete the activity in the punctuation app, the game designers are using the design approach to increase user focus and concentration. Time limits force users to act quickly, reducing their self-consciousness in the activity. Too often feelings of self-consciousness can prevent learners from fully participating in activities; the pressure of a time limit can help leaners focus on the task in front of them.

After using both apps for a period of time, users were interviewed about their experiences. Overall the homophone app received positive user experience feedback, with most users saying the green and gold check mark feedback was useful. (Browne, 2014) Nearly every user continued to practice the activity until they received gold check marks in each stage. (Browne, 2014) While the homophone application was not designed with a social element in mind, since the users were seated at a large table together when using the app, several users interacted with each other while using the app, comparing scores and competing to see who could earn a golden check mark first. (Browne, 2014)

The punctuation app also received generally positive feedback, though the user experience was significantly different. Unlike the homophone app in which users talked, laughed, and interacted socially, learners using the punctuation app hardly interacted at all. (Browne, 2014) The lack of social interaction highlights the difference between the two methods of gamification. The design approach used in the punctuation app uses time limits to create pressure for users to complete the exercises as quickly as possible. Users become so focused on the activity that they block out other external stimuli. (Browne, 2014) As the result of this focus, users ignored each other while using the app.

Recommendations for Gamification in Adult Literacy

After studying how educators are using gamification, we've come up with 3 do's and 3 don'ts for using gamification techniques in adult literacy education.

Do: ***Ask yourself, "is this actually fun?"***

If an activity isn't genuinely fun, all the points, leaderboards, and juicy feedback in the world can't make it more enjoyable. Gamification is more than just a way to mask boring activities. If you don't enjoy the activity, it's more than likely that your learners won't enjoy the activity either.

Do not: ***Ignore feedback***

Test out new activities with your learners and ask for their feedback. The biggest video game companies in the world spend millions each year conducting focus groups to refine and test their gameplay elements. What might be fun for one person might not be fun for another. Ask your learners about what they find fun, and have them test out your activities.

Do: ***Have fun yourself***

Games should be fun. Many adult learners are reluctant to play games. As an educator you'll need to cultivate a safe and encouraging atmosphere in your classroom. If you're having fun, your learners will see that, and begin to warm up to the activity.

Do not: ***Be afraid to make mistakes***

Educators must lead by example. If you are afraid to make mistakes in front of your class, they will be afraid to make mistakes in front of you. Fear of failure keeps learners from applying themselves, under the false assumption that if they don't try they can't fail. Games are all about learning from mistakes.

Do: ***Think about the pay-off***

While games are fun, gamification is about more than playing games for the sake of playing games. Every game element you include in your curriculum should have a specific objective. What behaviours are you trying to encourage with your game elements? How do the game elements you've selected make the activity more engaging? Are these game elements meeting the needs of your individual learners?

Don't: ***Be afraid to get messy***

Games thrive on unpredictability. When bringing game elements into your classroom take chances, make mistakes, and get your hands dirty. The more fun you're having, the more fun your learners will have.

Ready for more?

Be sure to check out the companion pieces to this report:

- "Gamification Essentials for Educators", a tip sheet that summarizes the key learnings of this report for adult literacy practitioners.
- "Using Gamification Techniques to Increase Learner Comfort with Typing", a sample exercise for adult literacy learners that includes several elements of gamification.

Both of the above documents, and this report, are available online at www.llsc.on.ca

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This *Employment Ontario* project is funded in part by the Government of Canada.