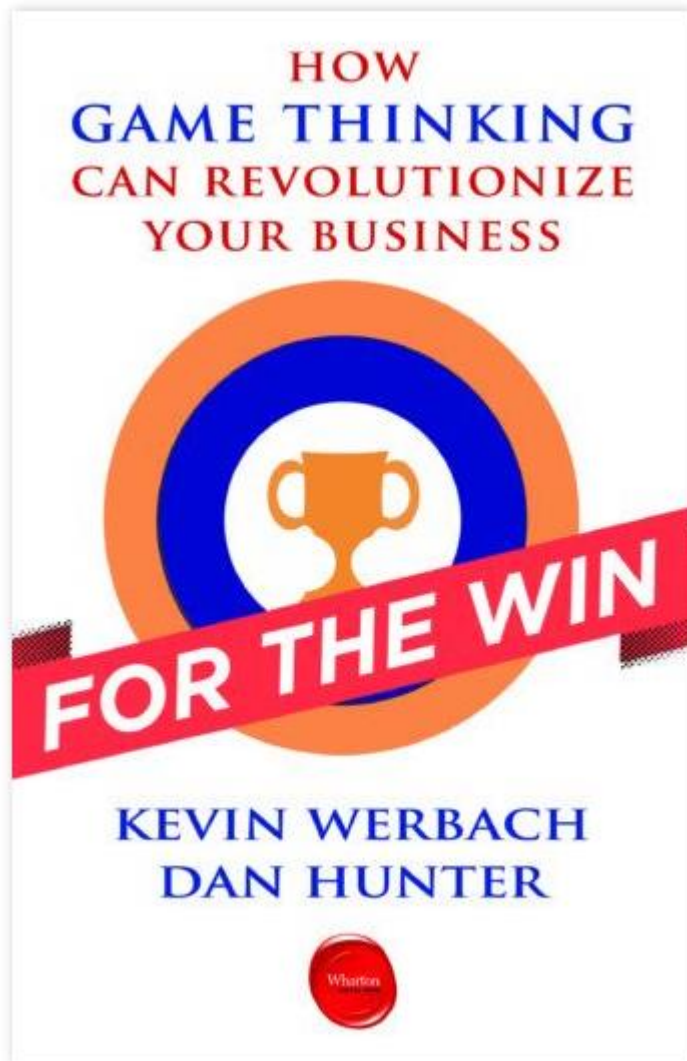


HU-Semesterprojekt

Gamification for Searching for Alternative Methods to Animal Experiments

(Mariana Neves)

Based on the book by Werbach and Hunter (2012):



coursera

Gamification

About this course: Gamification is the application of game elements and digital game design techniques to non-game problems, such as business and social impact challenges. This course will teach you the mechanisms of gamification, why it has such tremendous potential, and how to use it effectively. For additional information on the concepts described in the course, you can purchase Professor Werbach's

▼ More

Created by: University of Pennsylvania


ONLINE



Taught by: Kevin Werbach, Associate Professor
Legal Studies & Business Ethics

(Source: <https://wdp.wharton.upenn.edu/book/for-the-win/>)

Gamification:

- Also called **Games with a purpose (GWAP)** or **Serious Games**.
- Definition: Apply game mechanics to business environment. It uses game elements and game-design techniques in non-game contexts.
- Werbach & Hunter 2012:
 - “[..] gamification is about finding the fun in the things that we have to do.”
 - “Monetary rewards aren’t necessary because the game itself is the reward.”
- Can be applied to companies, business or to motivate people to do boring tasks.
- But game design is hard! It requires understanding of **game design** and **business techniques**.

Examples of Gamification

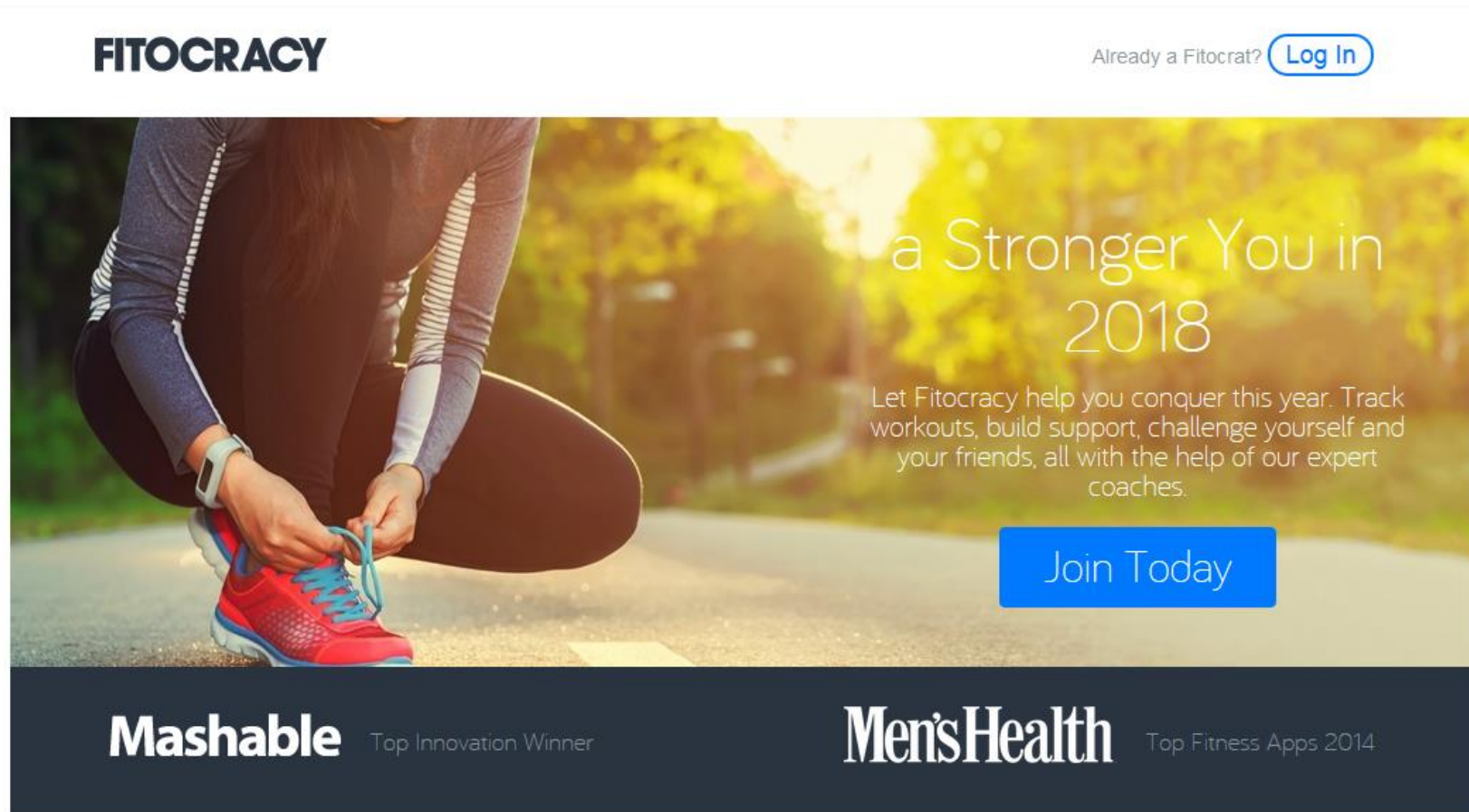
Motivate people to use the stairs: Fun Theory Piano Staircase in Stockholm
(66% more people took the stairs)



(Source of video: <https://youtu.be/SByymar3bds>
More info: <http://creativity-online.com/work/volkswagen-fun-theory-piano-staircase/17522>)

Motivation:

- How to motivate people?



The image shows a screenshot of the Fitocracy app landing page. At the top left is the 'FITOCRACY' logo. At the top right, it says 'Already a Fitocrat?' with a 'Log In' button. The main visual is a woman in athletic wear tying her red and blue running shoes on a path. Overlaid on the right side of the image is the text 'a Stronger You in 2018' followed by a paragraph: 'Let Fitocracy help you conquer this year. Track workouts, build support, challenge yourself and your friends, all with the help of our expert coaches.' Below this is a blue 'Join Today' button. At the bottom, there are two logos: 'Mashable Top Innovation Winner' and 'Men's Health Top Fitness Apps 2014'.



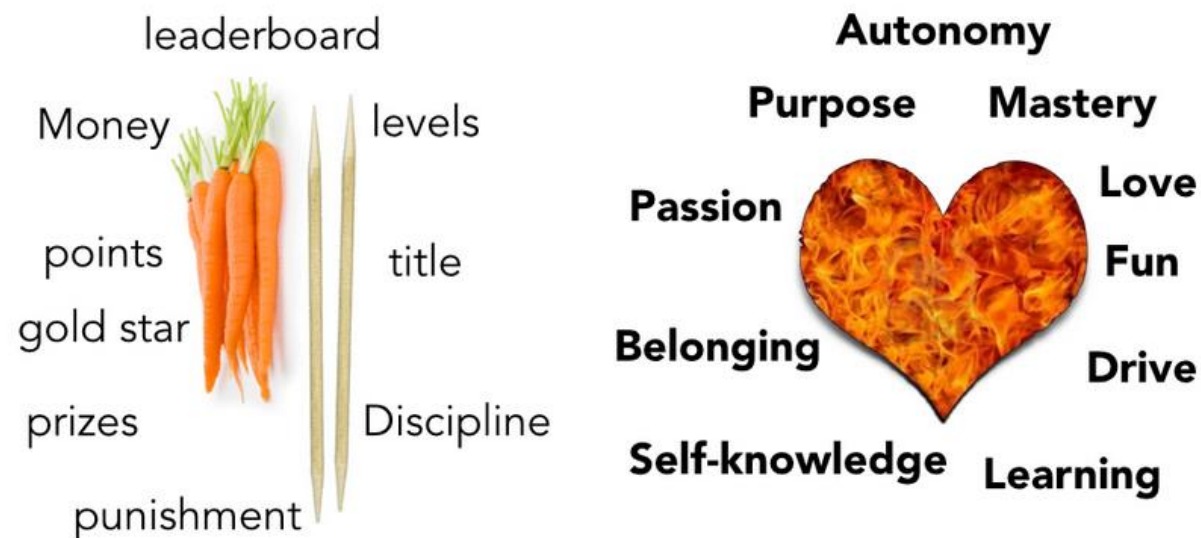
MOTIVATION & ACCOUNTABILITY

Your coach works with you on a daily basis to keep you motivated and on track. They're your secret weapon to hit any goal, no matter what it is.

Motivation:

- Motivation comes from „motivus“ (Latin) which means „serving to move“.
- **Extrinsic motivation:** reasons beyond the enjoyment and engagement with the activity.
- **Intrinsic motivation:** reasons related to enjoyment of the activity

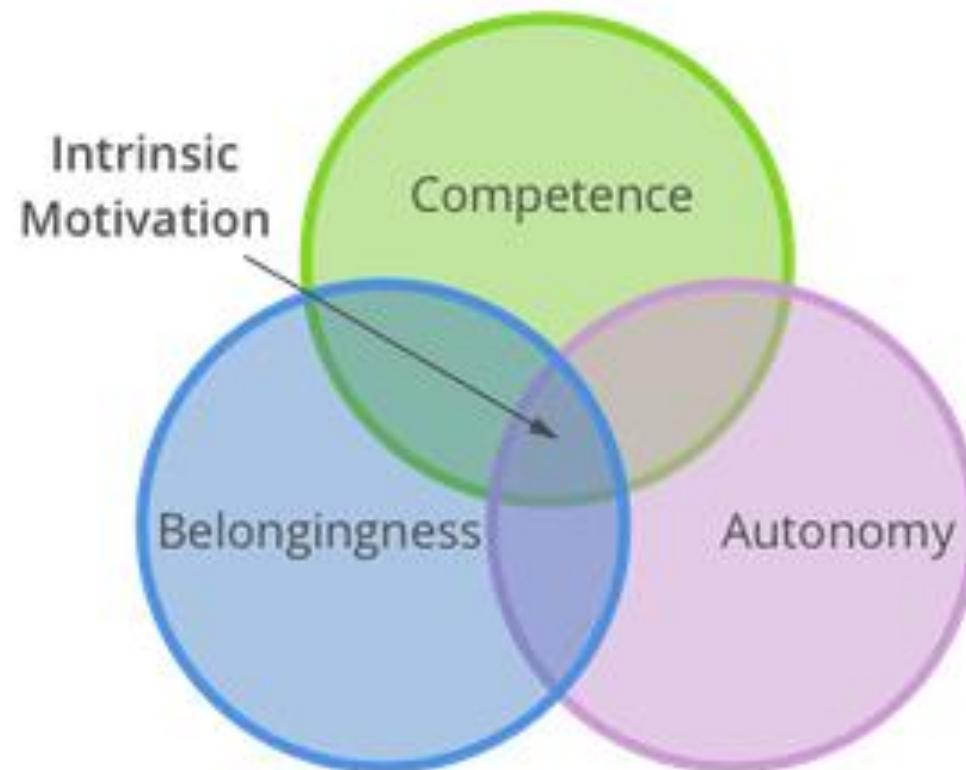
Extrinsic vs Intrinsic



(Source: <https://www.oneclearmessage.co.za/intrinsic-motivation-3-0/>)

Elements of the Self-Determination Theory (SDT):

- **Autonomy**: „need to feel in command of one's life and to be doing that which is meaningful and in harmony to one's value“
- **Competence** (or mastery): effective in dealing with the external environment.
- Relatedness (or **Belongingness**): social connection with friends, family, etc.



(Source: <http://gamefulpedagogy.com/what-is-gameful/>)

Different people respond differently to certain stimuli:

„Gamification is the high fructose corn syrup of motivation“
(Kathy Sierra)

Lessons for Gamification:

- „Rewards Can Crowd Out Fun“

For interesting tasks, intrinsic motivation dissipates when extrinsic rewards are tangible, expected and contingent.

- „Boring Can Be Engaging“

Moderate extrinsic reward can encourage boring or repetitive tasks.

- „Tune Your Feedback“

When well designed, (unexpected) feedback pushes users towards desired behaviours. Reinforcement feedback (e.g., graph of steps) helps to keep user in the right way.

- „Work Across the Motivational Continuum“

Extrinsic motivators can be introjected (user's ego), internalized (user comprehension on the importance of the task) or integrated (part of a group or community).

- „Don't Be Evil“

Use gamification to encourage people to do ethical tasks, bringing them happiness and make them to achieve their goals.

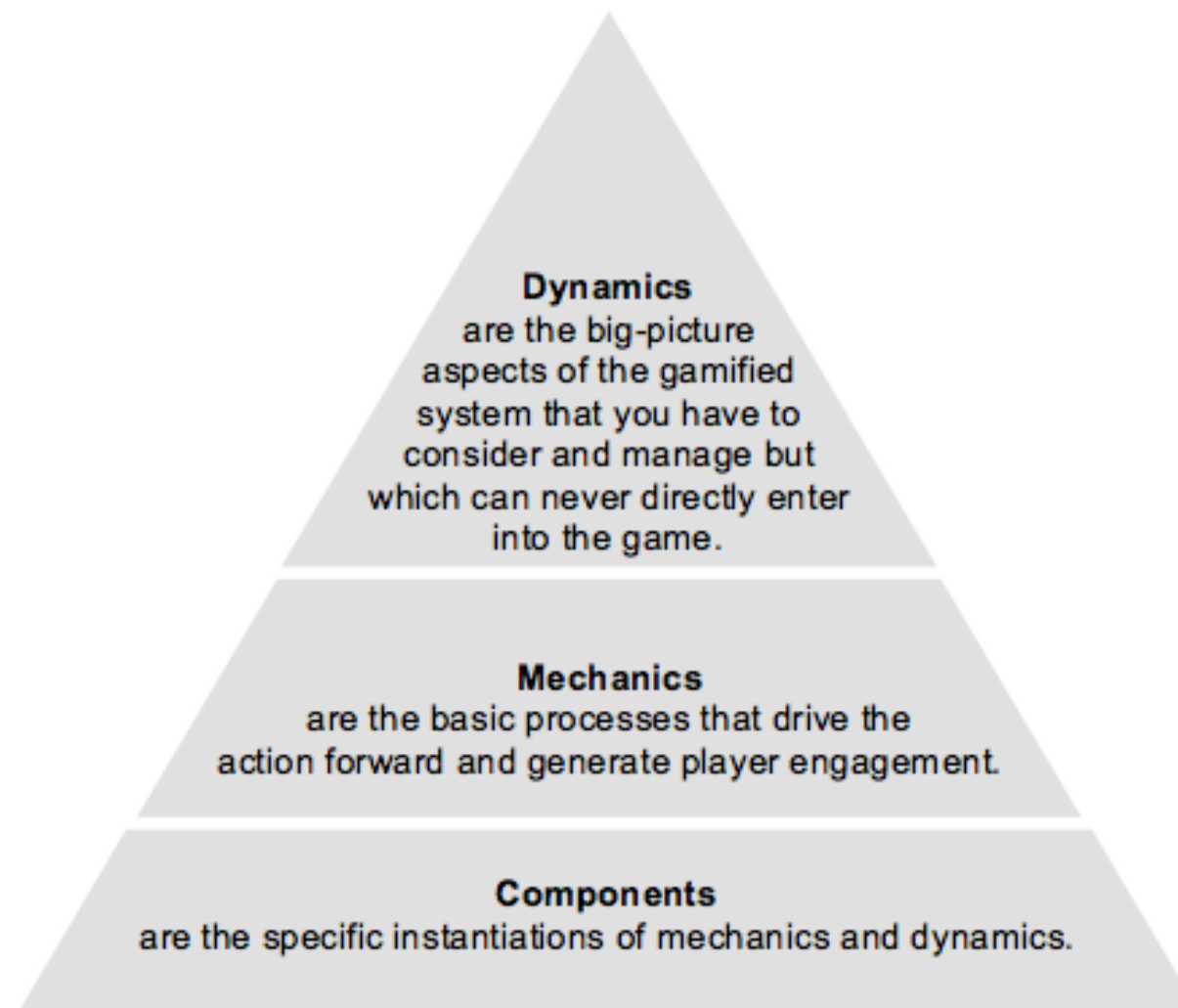
Game elements: The PBL Triad

- Points, Badges, Leaderboards:
 - **Points** keep score, determine the win state, provide feedback, display progress, provides data for designers.
 - **Badges** provides goals and guidance to the user and are virtual status symbols and tribal markers. Badges are flexible and creative!
 - **Leaderboards** give context to progression but can be demotivating. It can track any feature and more than one leaderboard is possible for an application. They are not suitable for every project.



(Source: <https://www.fitbit.com/de/app>)

Game Element Hierarchy:



(Source: Werbach and Hunter 2012)

Game elements: Dynamics

Highest level abstraction of games:

- Constraints (limitations or forced trade-offs)
- Emotions (curiosity, competitiveness, frustration, happiness)
- Narrative (consistent, ongoing storyline)
- Progression (the player's growth and development)
[Steps to find a solution; Comparison of feedback to others]
- Relationships (social interactions generating feelings of camaraderie, status, altruism)
[Share findings; Help others to find alternative methods]

(Source: <https://www.fitbit.com/de/app>)

Game elements: Mechanics

Drive action forward and generate player engagement.

- Challenges (puzzles or tasks difficult to solve) **[Quiz of the week]**
- Chance (element of randomness) **[Unexpected questions]**
- Competition (between players or teams) **[Competition among colleagues]**
- Cooperation (among players) **[Request for searching for an alternative method]**
- Feedback (how well is the player doing) **[Inform that the found method was also found by x researchers before]**
- Resource aquisition (obtaining useful and collectible items) **[Feedback and findings]**
- Rewards (benefits for action or achivement) **[Points and/or co-authorships]**
- Transactions (trading between players)
- Turns (sequential participation by alternating players)
- Win states (objectives that make players or teams winners) **[Finding a new method]**

Game elements: Components

More specific forms that dynamics and mechanics can take.

- Achievements (defined objectives) **[Find alternative methods]**
- Avatars
- Badges **[Rescuer of the month/week]**
- Boss fighters (hard challenges at the culmination of a level)
- Collections (set of items or badges to accumulate) **[Collect findings]**
- Combat **[Challenge a colleague on searching alternative methods]**
- Content unlocking
- Gifting (opportunities to share resources with others) **[Share findings]**
- Leaderboards **[Ranking of more findings; Ranking of more feedback]**
- Levels (defined steps in player progression) **[Steps to find an alternative method]**
- Points **[When finding a NEW method; When giving feedback]**
- Quest (predefined challenges with objectives and rewards) **[Quiz of the week]**
- Social graphs
- Teams
- Virtual goods (game assets with perceived or real-money value)

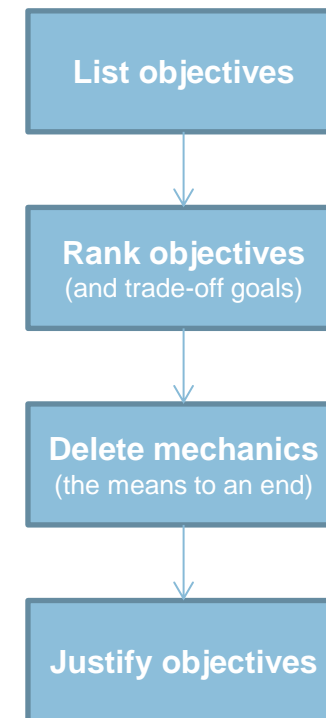
Six steps to Gamification:

- DEFINE business objects
- DELINEATE target behaviours
- DESCRIBE your player
- DEVISE activity cycles
- DON'T forget the fun!
- DEPLOY the appropriate tools

(Source: <https://www.fitbit.com/de/app>)

DEFINE business objects (1/6):

- **Motivate researchers to do a proper search of alternative methods to animal experiments;**
- **Make literature search less boring;**
- **Inform others research about alternative methods to animal experiments.**
- **Create comprehensive (an collaborative) resource (database, ontology) on alternative methods**



DELINEATE your target behaviours (2/6):

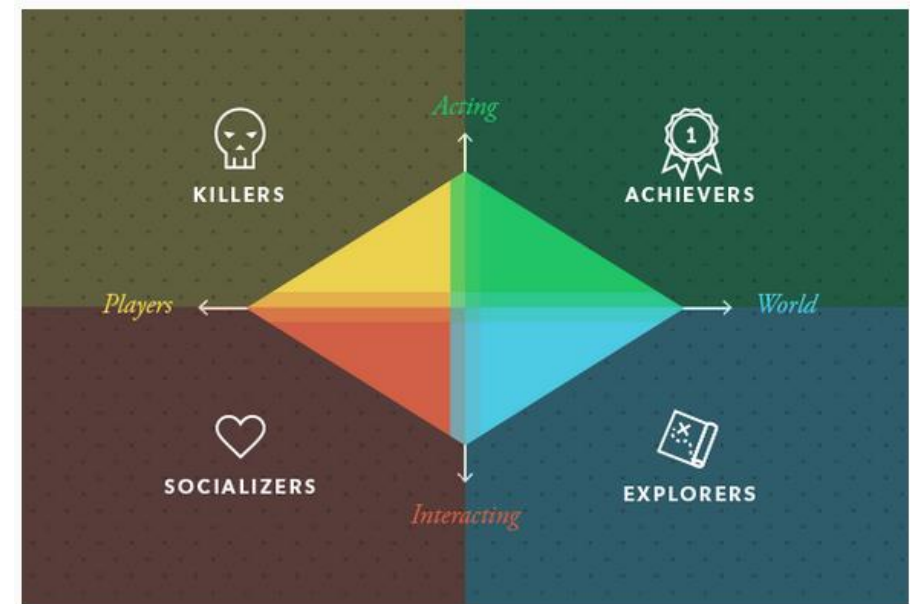
What you want your players to do and how you'll measure them.

- Carry out a proper search by going through all steps (levels), e.g., until the comparison window;
- Spend a enough time on the search (e.g., 10 minutes);
- Give feedback on the results;
- Share the findings with the community (e.g., Twitter).

(Source: <https://www.fitbit.com/de/app>)

DESCRIBE your players (3/6):

- Player: researcher interested (or forced, or curious) to find (or browse) alternative methods to animal experiments
- Reasons for demotivation:
 - Volition (lack of desire) [Researchers who doubt that there is an alternative method]
 - Faculty (lack of capability) [Students]
- Types of players:
 - Achievers (level up and earn badges)
 - Explorers (find new content)
 - Socializers (engage with colleagues)
 - Killers (impose their will on others)

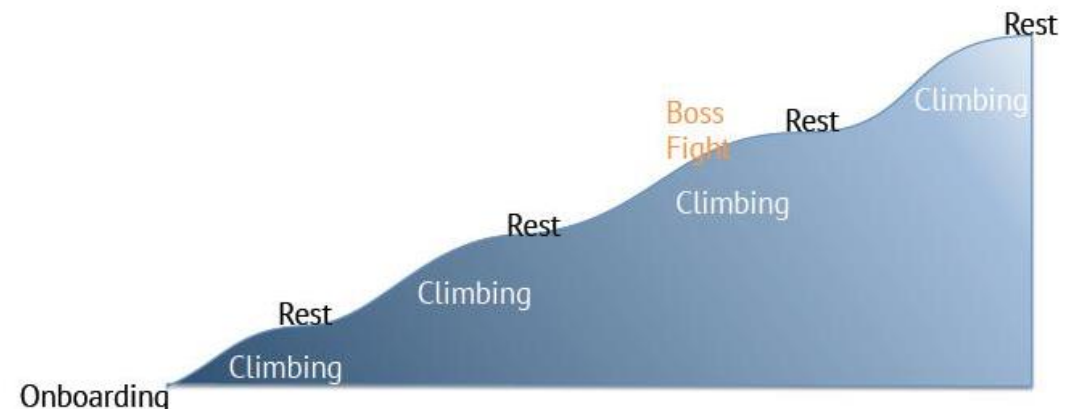


(Source: <https://gamedevelopment.tutsplus.com/articles/bartles-taxonomy-of-player-types-and-why-it-doesnt-apply-to-everything--gamedev-4173>)

DEVISE your activity cycles (4/6):

Two kinds of cycles:

- Engagement loops (micro level, FEEDBACK):
 - What do your players do? **[Give feedback on the results]**
 - Why do they do it? **[Get points, Improve the system's precision]**
 - What does the system do in response? **[Give x points to the user, learn from the feedback]**
- Progression stairs (macro perspective on the player's journey):
 - Short-term missions, long-term goals **[Check some of the publications in the results' list to find an alternative method]**
 - Satisfaction of mastery **[Find an alternative method to a previously unsuccessfully search]**



(Source: <https://gamification21.files.wordpress.com/2013/04/progressionloop2.jpg>)

DON'T forget the fun (5/6):

Would players participate in your system voluntarily?

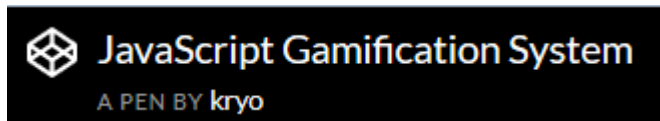
If there weren't any extrinsic rewards, would they still be likely to play?

Types of fun (according to Lazzaro):

- Hard fun (challenge or puzzle). [\[Comparison/feedback window, pop-up asking if a certain method is an alternative method\]](#)
- Easy fun (casual enjoyment). [\[Validating already known alternative methods\]](#)
- Experimental fun (new experiences). [\[Try searching for a new domain\]](#)
- Social fun (interaction with others, competition). [\[Leaderboard; Badge of Rescuer of the Month/Week\]](#)

DEPLOY the appropriate tools (6/6):

Picking the appropriate mechanics and components and coding them into the system.



Gamification - Responsive HTML5 UI Prototype Challenge

UI Prototype Competition TC014 Angular.js (1.0) Bootstrap HTML5 JavaScript HTML

gamification-engine

build passing coverage 58% requirements outdated heroku deployed docs master release v0.2.2 pypi package 0.2.2 python 3.4, 3.5
license mit

The Gamification-Engine (gengine) is an open source software (MIT) for integrating any kinds of gamification features into your product.

(Sources: <https://codepen.io/kryo2k/pen/VYrZPr>
<https://www.topcoder.com/challenges/30041861/?type=develop>
<https://github.com/ActiDoo/gamification-engine>)

Pitfalls of Gamification:



(Source: <https://cowclicker.com/>)

Pitfalls of Gamification (what NOT to do):

- Pointsification (focus too heavily on rewards) **[Easily getting points for any activity]**
- Legal issues
 - Privacy (users' data collection)
 - Intellectual property
 - Property rights in virtual assets **[The provided feedback]**
 - Gambling
 - Deceptive practices (fooling users) **[Ranking documents badly to make users to validate more documents]**
 - Advertising
 - Labor (addiction)
 - Paid endorsements
 - Virtual currency regulation
- Exploitationware (instead of voluntariness) **[User have to provide feedback in order to search further]**
- Gaming the Game (people don't act the way we expect) **[Getting points for „finding“ already known alternative methods]**

DANKE FÜR IHRE AUFMERKSAMKEIT

Bundesinstitut für Risikobewertung

Max-Dohrn-Str. 8-10 • 10589 Berlin

Tel. 0 30 - 184 12 - 0 • Fax 0 30 - 184 12 - 47 41

bfr@bfr.bund.de • www.bfr.bund.de