Unit 3: Game based Learning & Gamification

Photos by pixabay

Hello!

WE ARE Katharina Hohla & Martin Ebner

*„A good game should be **easy to learn**, but **difficult to master**.“*

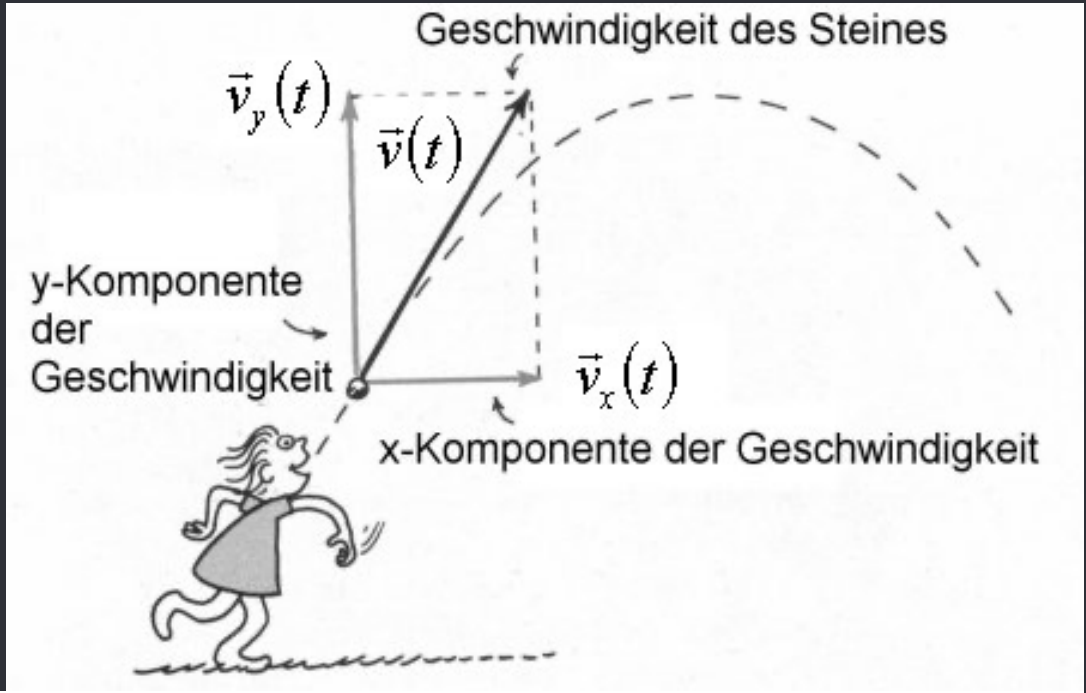
(Nolan Bushnell, the founder of Atari, Inc)

1

Learning with Games

Do we really learn with games?

- Parabola of throwing



$$\vec{v}_x(t) = v_o \cdot \cos(\alpha)$$

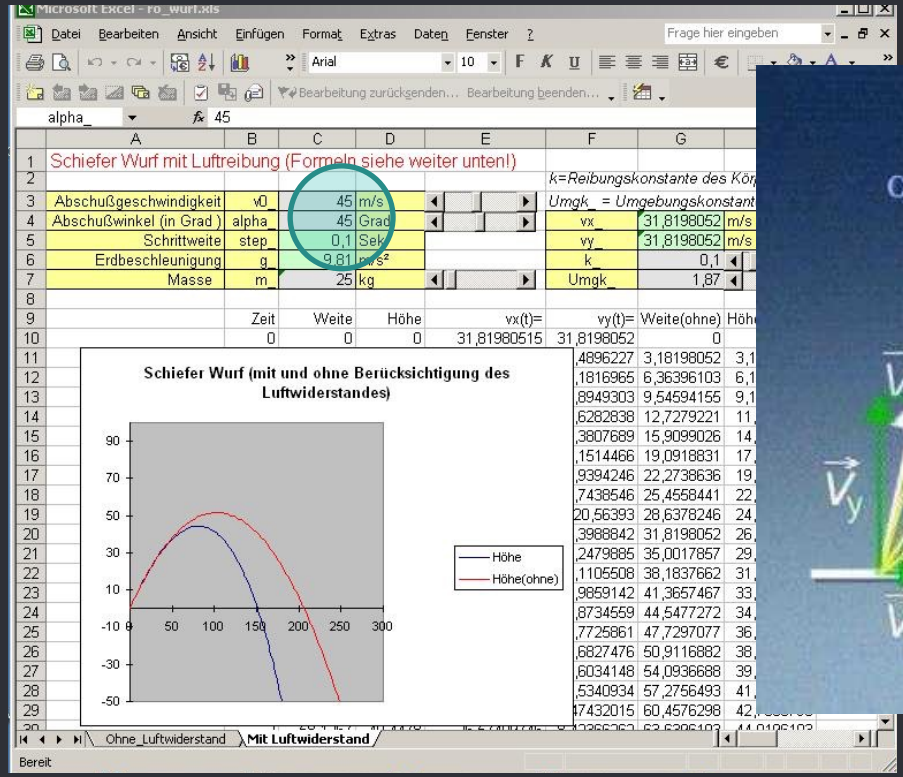
$$\vec{v}_y(t) = v_o \cdot \sin(\alpha)$$

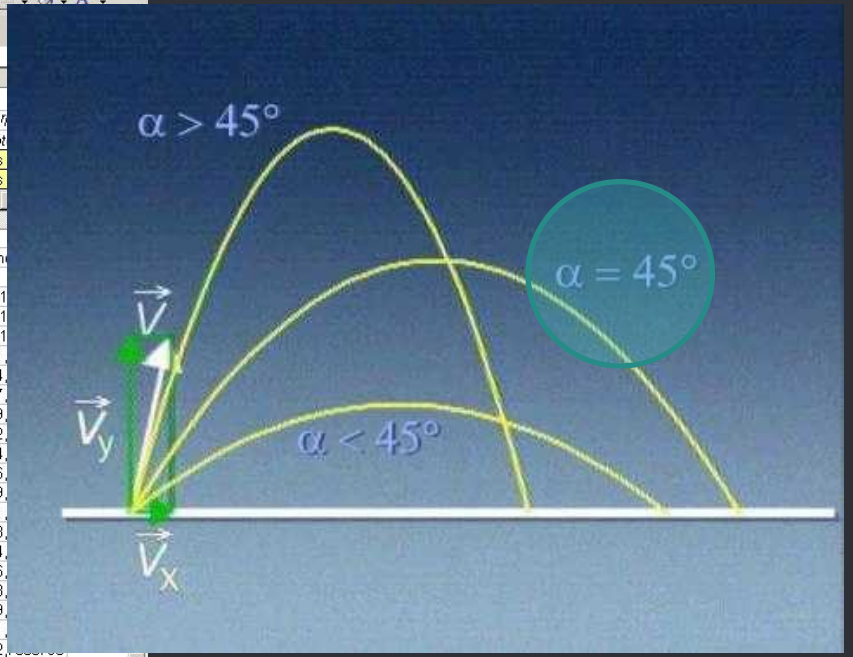
$$\vec{v}_{Fall}(t) = -g \cdot t$$

Throwing distance:

$$s = \frac{v_0^2 \cdot \sin(2\alpha)}{g}$$

Launch Angel





- Yetisports


YETISPORTS Part1 - Microsoft Internet Explorer
YETISPORTS PART1
PLAYER: TEST
1: 182.4
2: --
3: --
4: --
5: --
SCORE: 182.4
TOP: 182.4
1978
REINHOLD
+YETI
A CHRIS HILGERT GAME ©2004 EDELWEISS MEDIENWERKST.AT - HTTP://WWW.E-MEDIEN.COM

- Yetisports


YETISPORTS Part1 - Microsoft Internet Explorer
YETISPORTS PART 1
PLAYER: TEST
1: 179.9
2: 179.6
3: 0
4: 0
5: –
SCORE: 359.5
TOP: 207.3
α
298.2
OK
A CHRIS HILGERT GAME ©2004 EDELWEISS MEDIENWERKST.AT - HTTP://WWW.E-MEDIEN.COM

Learning Games

Motivation

... it is fun because playing is not identified as actual learning

(Holzinger, 2001)

Implicit Learning

... is learning that is not consciously perceived by the learner.

(Holzinger & Maurer, 1999)

- Three factors
  (Malone, 1980)

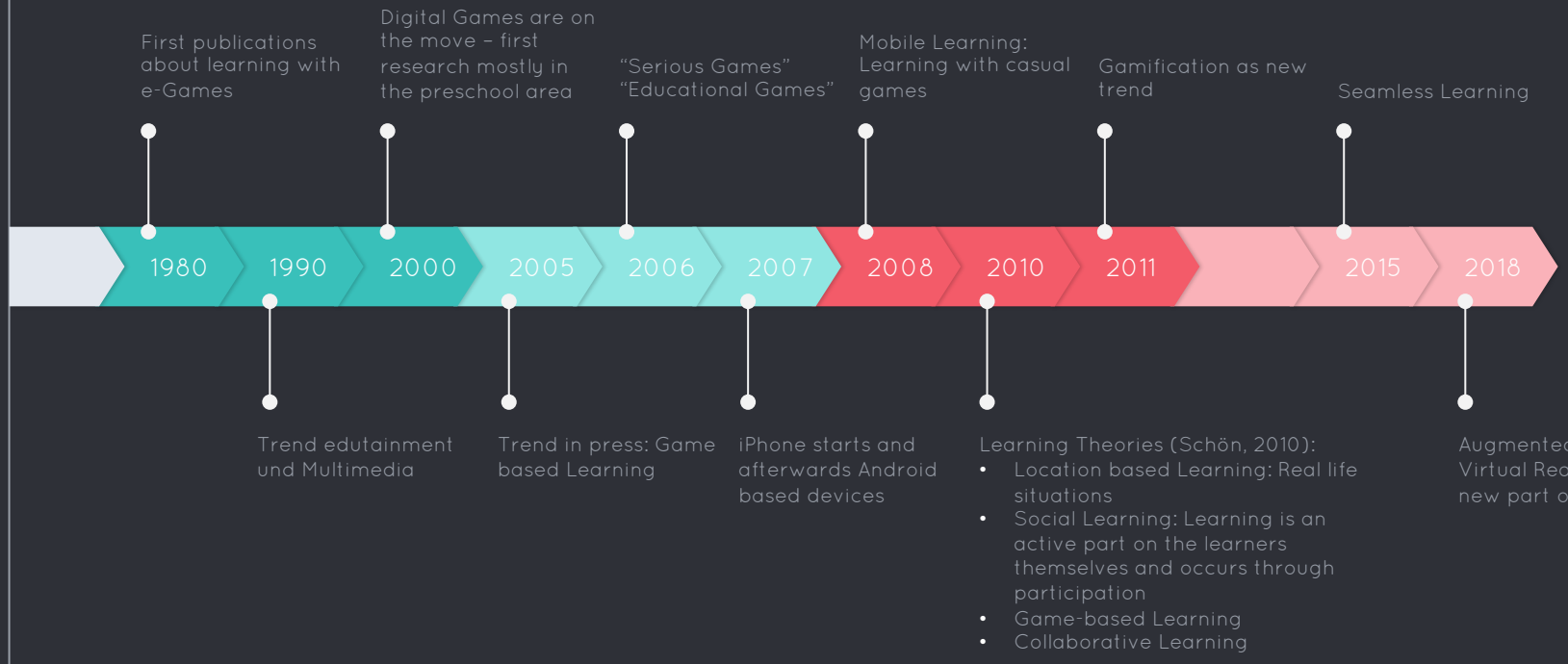
http://www.flickr.com/photos/bods/6119906063

2

Game Based Learning

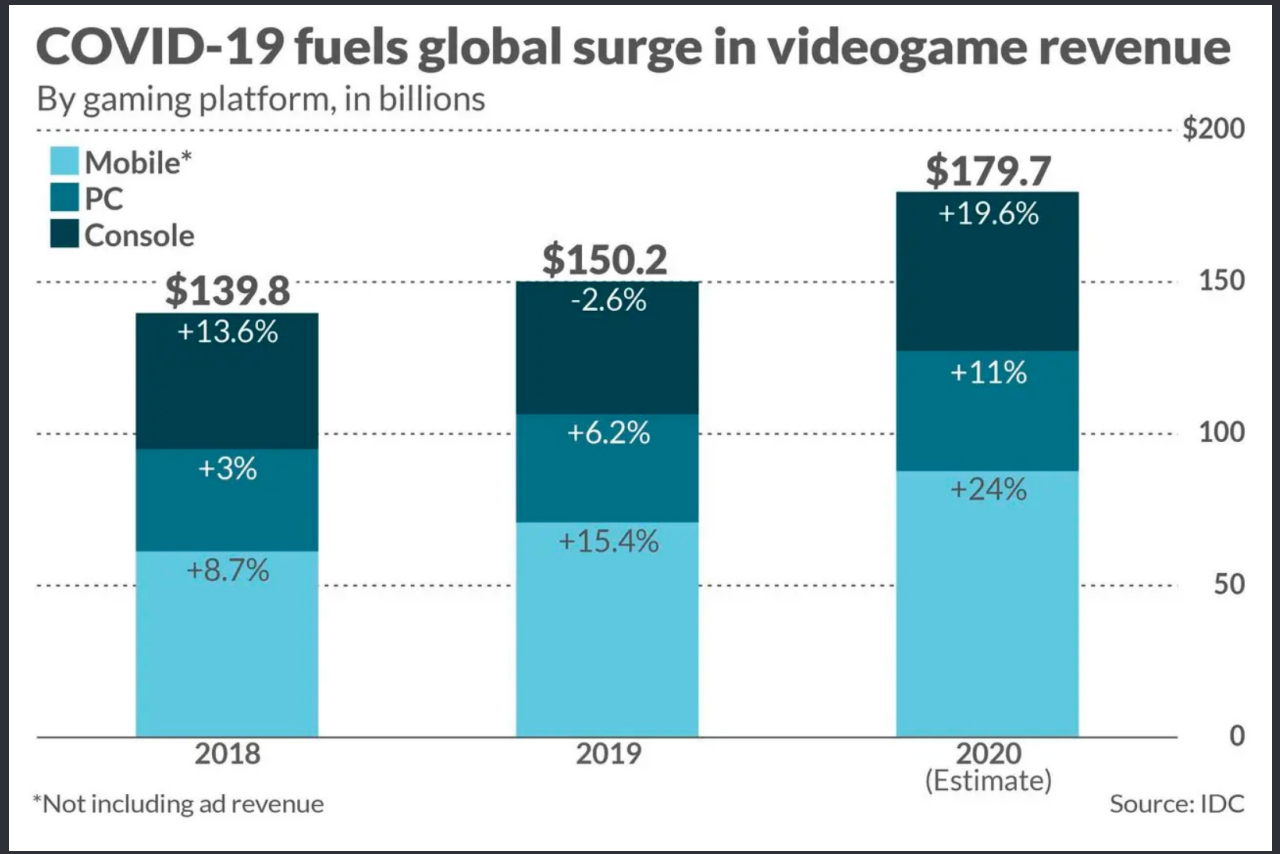
... seems to be a growing field

History


1980
First publications about learning with e-Games
1990
Trend edutainment und Multimedia
2000
Digital Games are on the move – first research mostly in the preschool area
2005
Trend in press: Game based Learning
2006
"Serious Games" "Educational Games"
2007
iPhone starts and afterwards Android based devices
2008
Mobile Learning: Learning with casual games
2010
Learning Theories (Schön, 2010):
• Location based Learning: Real life situations
• Social Learning: Learning is an active part on the learners themselves and occurs through participation
• Game-based Learning
• Collaborative Learning
2011
Gamification as new trend
2015
Seamless Learning
2018
Augmented and Virtual Reality as new part of GBL

Sales 2020 - Video games are bigger than movies and sports combined!

https://dailygame.at/umsatz-2020-videospiele-sind-groesser-als-filme-und-sport-zusammen/



”Digital games are a rule-based, interactive medium that emotionally binds players and takes place within a space delimited from objective reality and whose underlying interaction technology is purely digital in nature.”

Wagner, 2008

Type of (learning) games

- Action games
- Adventure Games
- Casual Games
- Role Playing Games
- Simulation games
- Sports games
- Strategy games

Basic reflections (1/2)

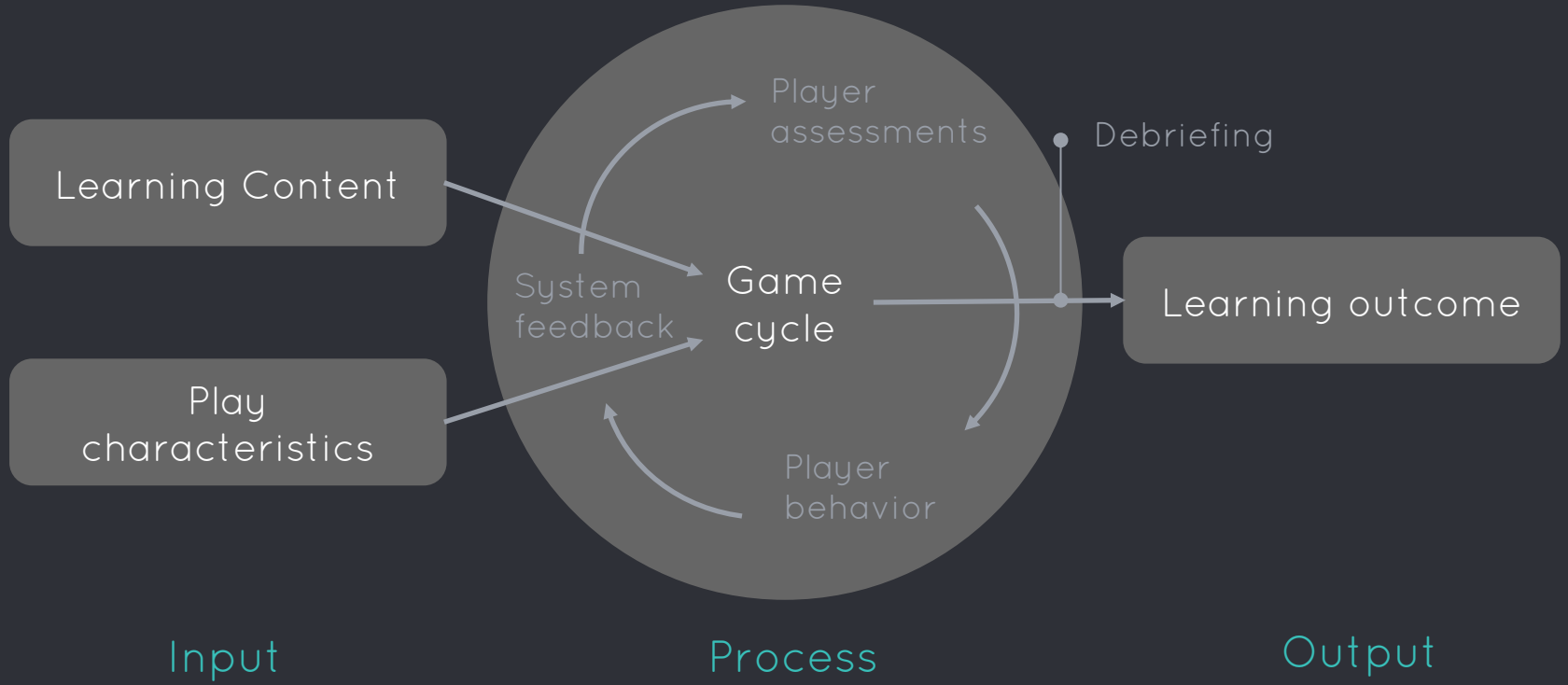
- Player's ability to learn (e. g pre-knowledge)
- Learning by playing as a **cycle of play** consisting of game behavior, feedback, assessment of the game feedback and own behavior
- Success leads to positive reinforcement

Basic reflections (2/2)

- Failure should lead to arouses ambition (motivation)
- Trial-and-error principle
- Learning-by-doing
- Predominantly implicit learning

Learning Game cylce

Input-Process-Output model for GBL (Garris & Driskell, 2002)



Learning theories

- active learning
- constructive learning
- self-directed learning
- social learning
- emotional learning
- situated learning

Potential of GBL

- High level of intrinsic motivation
- Strategic thinking in context
- Acquisition of generic and metacognitive skills
- increase of general self-confidence
- Is not perceived as a learning activity ("stealth learning"; implicit learning)

Challenges of GBL (1/3)

- Games according to game theorists purpose-free and voluntary
- Explicit learning can disturb the flow of the game
- Didactically meaningful integration of learning content and game mechanics
- Budget

Challenges of GBL (2/3)

- Ambivalent expectations of educational games (open framework vs. fixed curriculum; complex enough and lots of learning content vs. low cost; motivate and captivate for a long time vs. other learning content)
- Achievement of learning objectives cannot be guaranteed

Challenges of GBL (3/3)

- Teachers are indispensable as learning process facilitators
- Critical reflection (debriefing)

3

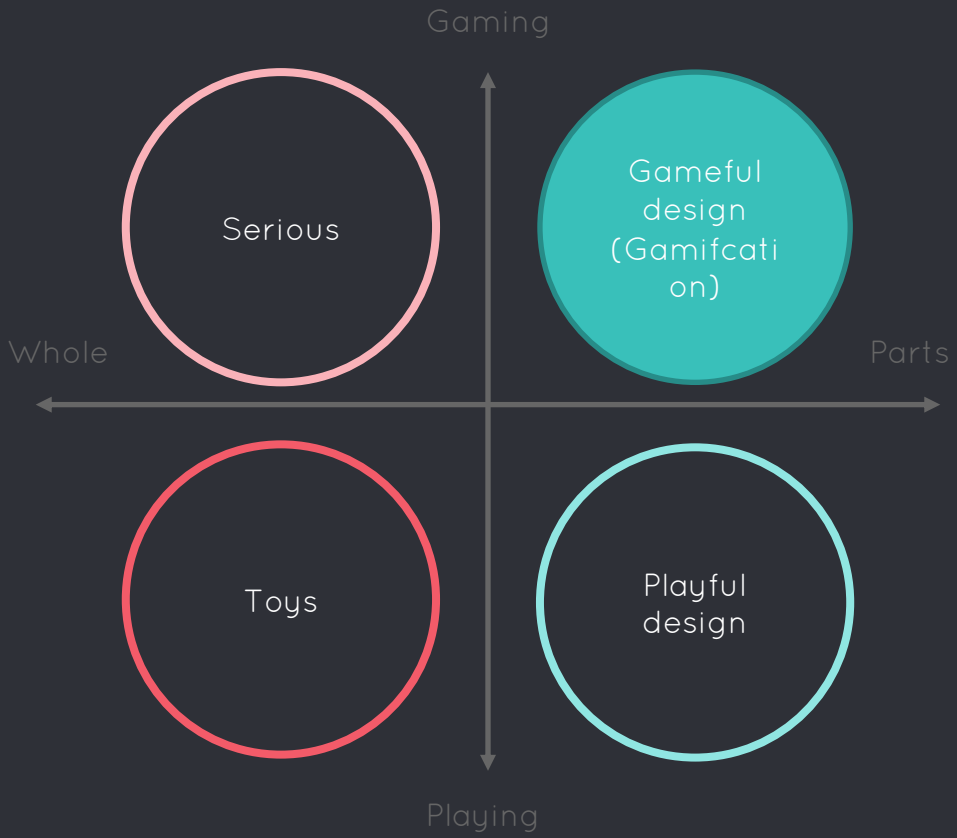
Gamification

... or how serious interfaces become more motivating

"Gamification is the use of game design elements in non-game contexts."

Deternig et al, 2011

Difference serious game and gamifcation



Deternig et al, 2011

Example “the fun theory” (1/2)

https://youtu.be/SByymar3bds

Examples (2/2)

TripAdvisor: Collect badges with increasing difficulty

Starbucks: Great Reward App makes you want (and thirst) for more

Microsoft: Learn Microsoft Office easier with Ribbon Hero

Reddit: Karma points through up-votes

SAP: Play golf when transferring orders

https://swacash.com/2020/09/18/11-great-examples-of-gamification-from-successful-companies/

Gamification elements (1/4)

- Achievements (defined objectives)
- Avatars (visual representation of a player character)
- Badges (visual representations of achievements)
- Battles with final enemies (special challenges at the climax)

Gamification elements (2/4)

- Collections (collecting sets of items or badges)
- Combat (a defined battle., usually short-lived)
- Unlocking content (aspects that are only achieved when players complete objectives)
- Gifting (ways to share resources with others)

Gamification elements (3/4)

- Leaderboards (visual display of player progress and achievements)
- Levels (defined areas in player progress)
- Points (numerical representation of game progress)
- Tasks (defined challenges with objectives and rewards)

Gamification elements (4/4)

- Social graphs (representation of the players' social network within the game)
- Teams (defined groups working together for a common goal)
- Virtual goods (game assets with perceived or real monetary value)

Group Work

... it's your turn

Thanks for the attention!

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