

Autonomy in gamification: A case study

Dr. Réka Mihálka

The Language Center of UZH and ETH Zurich

Conclusion

Implementation

Intro

Background

Objectives

- to demonstrate the synergy between gamification and autonomous learning
- to showcase a way to implement autonomous gamified learning



Autonomy in gamification: A case study

Dr. Réka Mihálka

The Language Center of UZH and ETH Zurich

Conclusion

Implementation

Intro

Background

Gamification & Autonomous Learning

- Gamification defined as "the use of design elements characteristic for games in non-game contexts" (Deterding et al., 2011, p. 9)
- Autonomous learning (or learner autonomy): the student has control over all aspects of their learning process and, in exchange, bears responsibility for its outcome

Shallow vs.
deep
gamification

Game-like
experience

Autonomous
gamified learning

Shallow vs. deep gamification

Gamification needs to involve systemic change.

**Shallow
gamification**

**The theory of
gamified
learning**

**Empirical
results**



taking **the thing that is least essential to games** and representing it as the core of the experience



(Robertson, 2010, para. 4, original emphasis)



Shallow vs. deep gamification

Gamification needs to involve systemic change.

**Shallow
gamification**

**The theory of
gamified
learning**

**Empirical
results**

The theory of gamified learning

To bring about positive

- **cognitive**
- **motivational**
- **behavioral**

changes in the student for the sake of improved learning.

(Landers 2014; Landers et al. 2018)



Shallow vs. deep gamification

Gamification needs to involve systemic change.

**Shallow
gamification**

**The theory of
gamified
learning**

**Empirical
results**

Empirical results

Link between gamification and improved learning outcomes (Garland 2015; Hamari et al. 2014; Seaborn and Fels (2015); Sailer and Homner 2019)

...but with some caveats



Need for further rigorous studies



Shallow vs. deep gamification

Gamification needs to involve systemic change.

**Shallow
gamification**

**The theory of
gamified
learning**

**Empirical
results**

Gamification & Autonomous Learning

- Gamification defined as "the use of design elements characteristic for games in non-game contexts" (Deterding et al., 2011, p. 9)
- Autonomous learning (or learner autonomy): the student has control over all aspects of their learning process and, in exchange, bears responsibility for its outcome

Shallow vs.
deep
gamification

Game-like
experience

Autonomous
gamified learning

Game-like experience

- Fun
- Freedom to explore
- Surmountable challenge
- Sense of achievement
- Gradual access to higher levels
- Immersion via engaging storyline and graphics
- Individual and multiplayer modes



Gamification & Autonomous Learning

- Gamification defined as "the use of design elements characteristic for games in non-game contexts" (Deterding et al., 2011, p. 9)
- Autonomous learning (or learner autonomy): the student has control over all aspects of their learning process and, in exchange, bears responsibility for its outcome

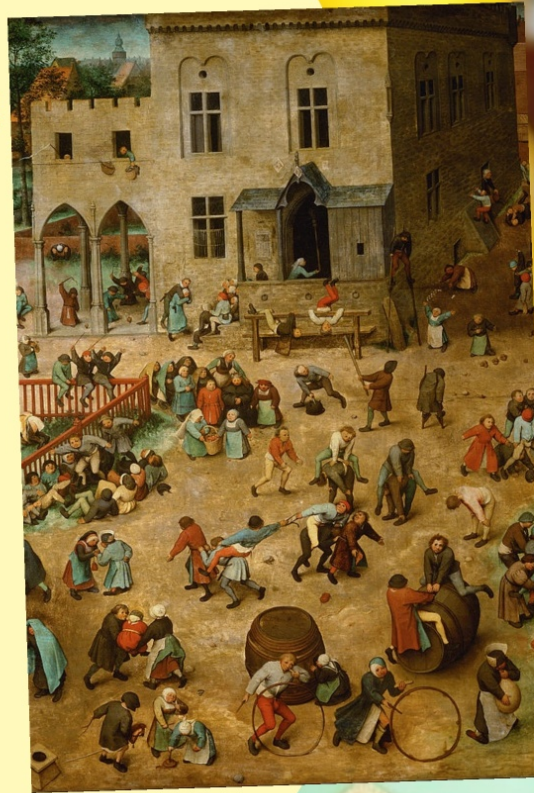
Shallow vs.
deep
gamification

Game-like
experience

Autonomous
gamified learning

Autonomous gamified learning

An individualized, non-linear learning framework that uses game-based **concepts** and **tools** for the sake of increased **engagement**.




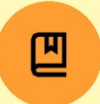

Concepts

Tools

Engagement

Self-determination theory in autonomous gamified learning

Ryan and Deci (2000 and 2002)

-  AUTONOMY: Freedom of choice
-  COMPETENCE: Effort rewarded over excellence
-  RELATEDNESS: Social interaction and feedback

Autonomy

Competence

Relatedness

Autonomy

Choice in:


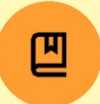

- learning content (a broad range of available topics)
- learning times (synchronous and asynchronous elements)
- learning organization (individually or in groups)
- learning environment (online or in class)

→ Individual learning paths and increased personal responsibility for learning



Self-determination theory in autonomous gamified learning

Ryan and Deci (2000 and 2002)

-  AUTONOMY: Freedom of choice
-  COMPETENCE: Effort rewarded over excellence
-  RELATEDNESS: Social interaction and feedback

Autonomy

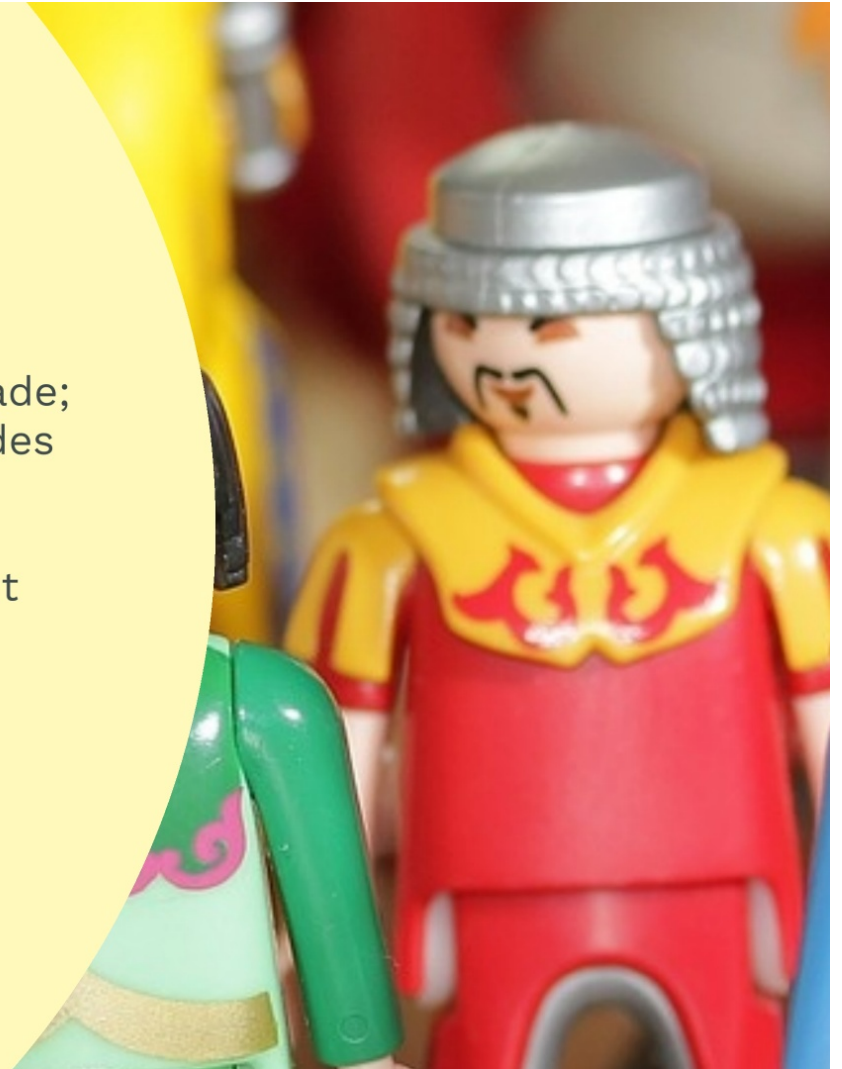
Competence

Relatedness

Competence


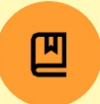

Failure is only possible if insufficient effort is made; immediate feedback from Moodle quizzes provides constant reward.

→ Sense of achievement and development



Self-determination theory in autonomous gamified learning

Ryan and Deci (2000 and 2002)

-  AUTONOMY: Freedom of choice
-  COMPETENCE: Effort rewarded over excellence
-  RELATEDNESS: Social interaction and feedback

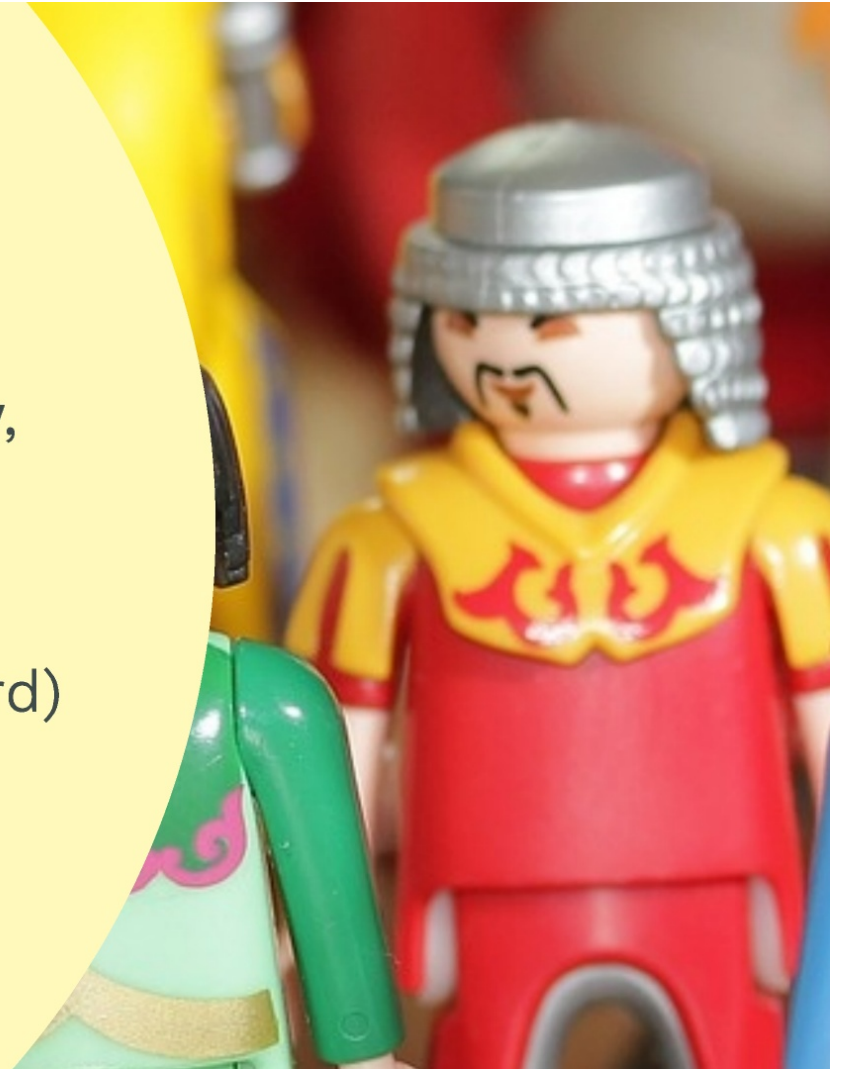
Autonomy

Competence

Relatedness


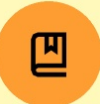

Relatedness

- Cooperation (e.g. peer review, collaborative writing, group projects, forum, student quizzes)
- Mild competition (leaderboard)



Self-determination theory in autonomous gamified learning

Ryan and Deci (2000 and 2002)

-  AUTONOMY: Freedom of choice
-  COMPETENCE: Effort rewarded over excellence
-  RELATEDNESS: Social interaction and feedback

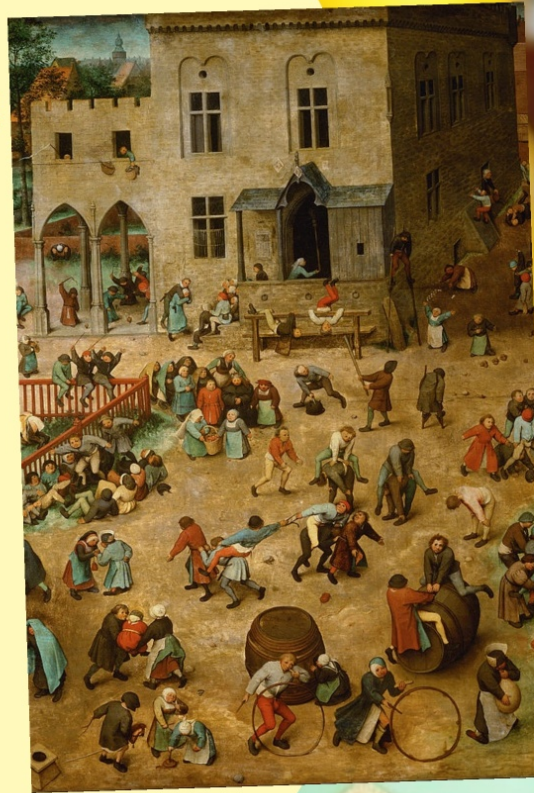
Autonomy

Competence

Relatedness

Autonomous gamified learning

An individualized, non-linear learning framework that uses game-based **concepts** and **tools** for the sake of increased **engagement**.



Concepts

Tools

Engagement

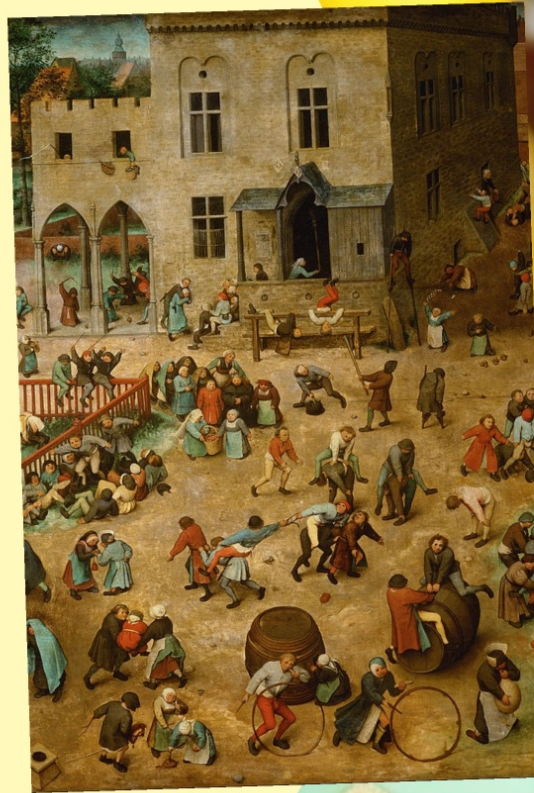
Tools

- Unveiling of content
- Progress indicators
- Levelling up
- Experience points and badges
- Leaderboards and collaborative spaces
- Engaging storyline with matching graphics



Autonomous gamified learning

An individualized, non-linear learning framework that uses game-based **concepts** and **tools** for the sake of increased **engagement**.



Concepts

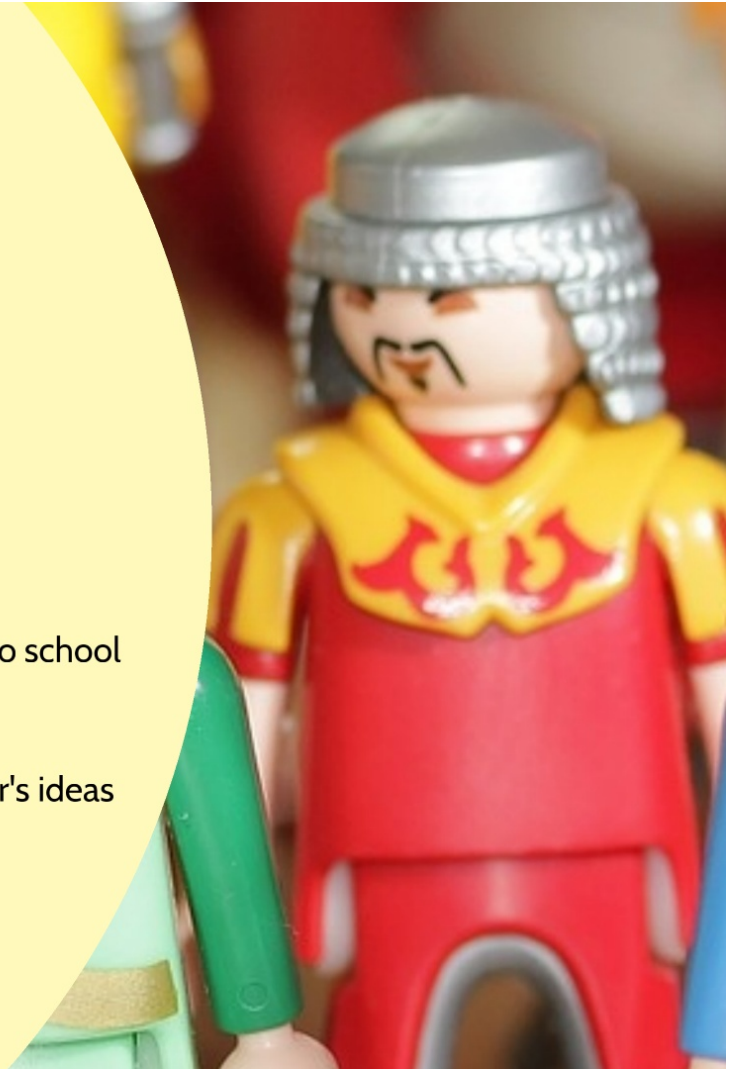
Tools

Engagement

Dimensions of engagement

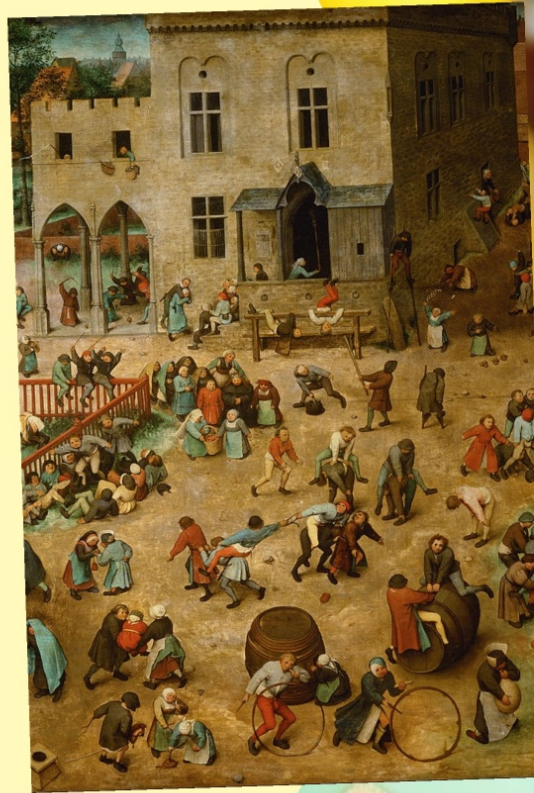
(Philp and Duchesne, 2016)

- 1 Cognitive:** sustained attention and mental effort
Unveiling of content
- 2 Behavioral:** time on task
Experience points, badges, levelling up, progress indicators
- 3 Affective/emotional:** enthusiasm, enjoyment, interest, relation to school
Storyline, graphics
- 4 Social:** mutuality, listening to one another, building on each other's ideas
Leaderboard, collaborative spaces



Autonomous gamified learning

An individualized, non-linear learning framework that uses game-based **concepts** and **tools** for the sake of increased **engagement**.



Concepts

Tools

Engagement

Gamification & Autonomous Learning

- Gamification defined as "the use of design elements characteristic for games in non-game contexts" (Deterding et al., 2011, p. 9)
- Autonomous learning (or learner autonomy): the student has control over all aspects of their learning process and, in exchange, bears responsibility for its outcome

Shallow vs.
deep
gamification

Game-like
experience

Autonomous
gamified learning

Autonomy in gamification: A case study

Dr. Réka Mihálka

The Language Center of UZH and ETH Zurich

Conclusion

Implementation

Intro

Background

Implementation

Autonomous gamified learning in practice



Teaching
context

Implementation

Evaluation

Academic Writing Course

Participants: 30-50 Swiss and international MSc students at the Department of Management, Technology and Economics at ETH Zurich

→ Diverse linguistic and disciplinary needs

Course aim: to prepare students for writing their master's thesis (and other texts)

Rationale for intervention: low motivation (a zero-credit compulsory course) & frequent scheduling conflicts



Implementation

Autonomous gamified learning in practice

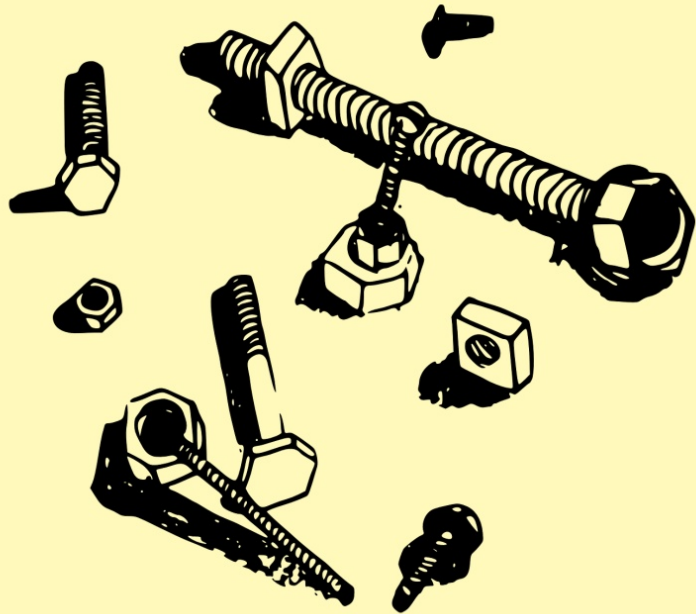


Teaching
context

Implementation

Evaluation

The nuts and bolts



Materials

Assessment

Platform

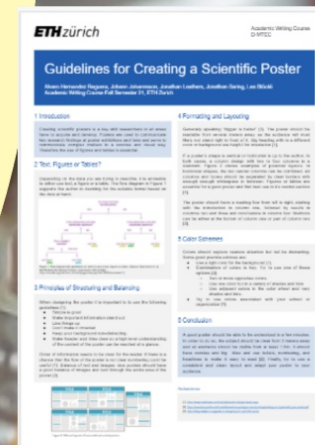
Materials

Online (asynchronous elements):

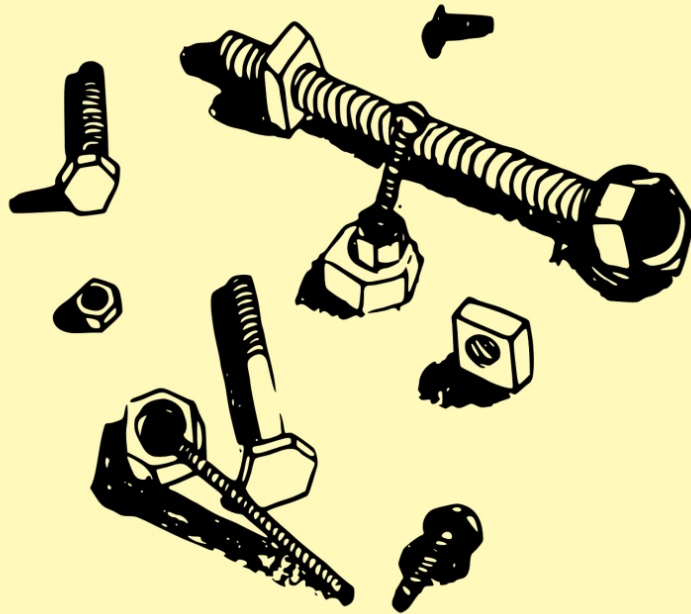
- Language input and practice
- Flipped-classroom activities
- Peer review, forums, collaborative space (Miro)

In-class (synchronous elements):

- Task-based learning activities (e.g. students study examples of scientific posters and compile guidelines for future students)



The nuts and bolts



Materials

Assessment

Platform

A point-based system

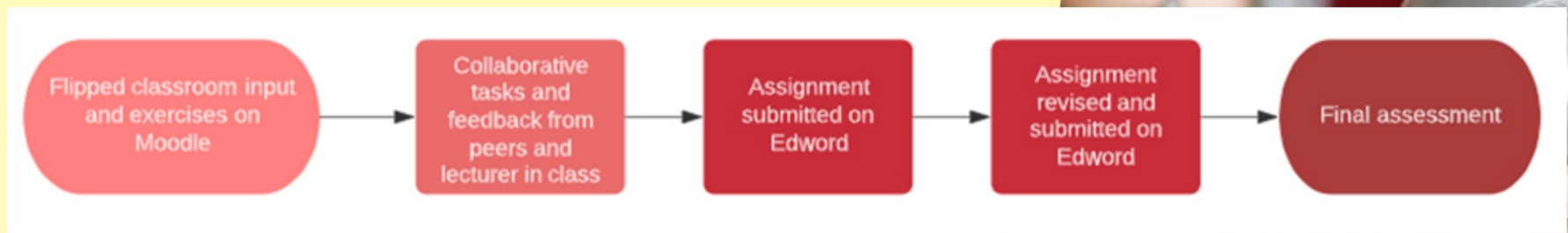
- Students need to collect 3500 points by the end of the semester to pass the course.
- They can decide how they want to earn points, depending on their personal preferences

Activity	Points
Acquiring a badge	100
Submitting a text for peer review	50
Submitting a text to the lecturer	100
Resubmitting a text to the lecturer	100
Peer reviewing another student's text	25
Coaching a fellow student (30 min)	30
Team project	1200/team
Attending a class	100
Completing a project in class	200/person
Creating a StudentQuiz question	20

Workflow

Workflow

Students can opt in or out of all learning phases; only the flipped classroom materials are mandatory for any of the subsequent steps.



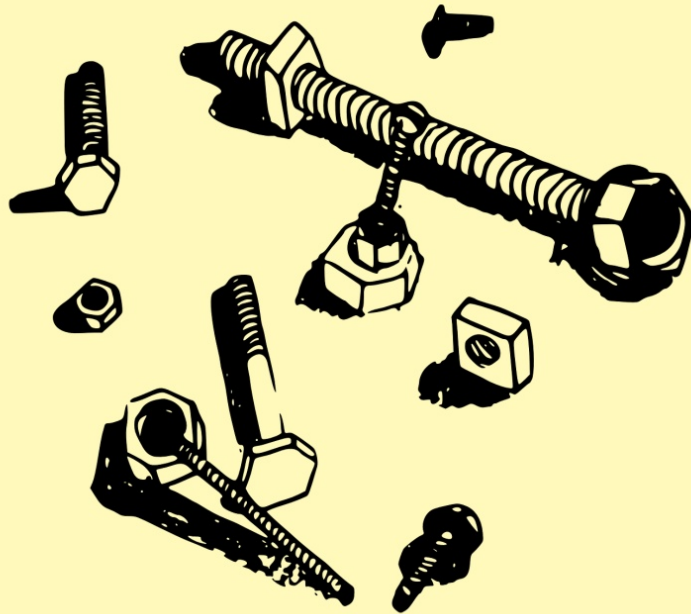
A point-based system

- Students need to collect 3500 points by the end of the semester to pass the course.
- They can decide how they want to earn points, depending on their personal preferences

Activity	Points
Acquiring a badge	100
Submitting a text for peer review	50
Submitting a text to the lecturer	100
Resubmitting a text to the lecturer	100
Peer reviewing another student's text	25
Coaching a fellow student (30 min)	30
Team project	1200/team
Attending a class	100
Completing a project in class	200/person
Creating a StudentQuiz question	20

Workflow

The nuts and bolts



Materials

Assessment

Platform



The Level Up! plug-in of Moodle automatically tracks points, levels, badges, etc. The teacher only needs to define the rules:

A screenshot of the Moodle Level Up! rule configuration interface. At the top, there is a text input field containing "100" followed by the text "points are earned when:" and a trash icon. Below this is a dropdown menu set to "ALL of the conditions are true". Underneath, there are two conditions listed, each with a plus icon on the left and a trash icon on the right. The first condition is "Activity name" followed by a dropdown menu set to "contains" and a text input field containing "Assignment". The second condition is "An activity or resource was successfully completed". At the bottom left, there is a blue plus icon followed by the text "Add a condition".

Points for in-class work (and some online activities) are added manually to the online score.

Activities

Activities in Moodle

- "Label" for level-dependent avatars and storyline
- "Lesson" for self-study materials
- "Quiz" for practice tests
- "Forum" for peer review and peer-to-peer discussions
- "StudentQuiz" for student-generated materials





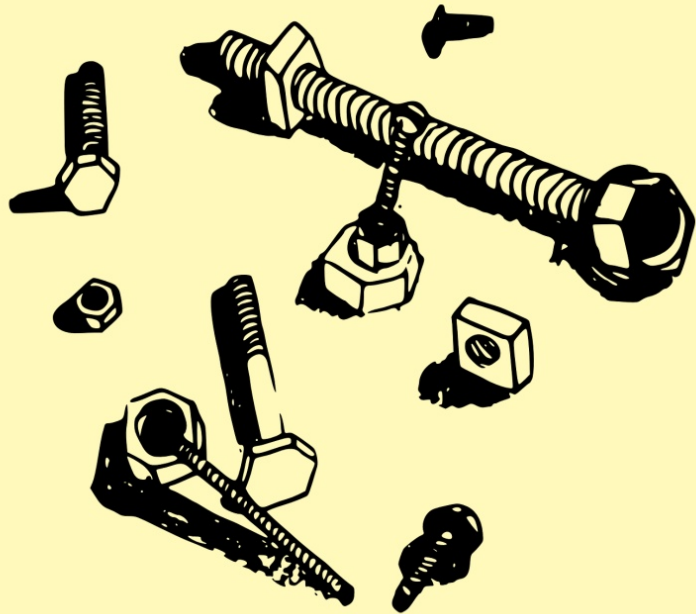
The Level Up! plug-in of Moodle automatically tracks points, levels, badges, etc. The teacher only needs to define the rules:

A screenshot of the Moodle Level Up! rule configuration interface. At the top, there is a text input field containing "100" followed by the text "points are earned when:" and a trash icon. Below this is a dropdown menu set to "ALL of the conditions are true". Underneath, there are two conditions listed: "Activity name contains Assignment" and "An activity or resource was successfully completed". Each condition has a plus icon on the left and a trash icon on the right. At the bottom, there is a link that says "+ Add a condition".

Activities

Points for in-class work (and some online activities) are added manually to the online score.

The nuts and bolts



Materials

Assessment

Platform

Implementation

Autonomous gamified learning in practice



Teaching
context

Implementation

Evaluation

Assessment of implementation

Survey about engagement levels
(autonomy, competence, relatedness)
with control group

→ Qualitative and quantitative data
on the impact of gamification

**Student
testimonials**

**Preliminary
results**

Student testimonials

"I believe we had a great group, and we really enjoyed putting in the extra effort to create the poster."

"I very much enjoyed the open working environment during the lectures. This feeling was emphasised by the work done in small groups. This allowed for frequent interactions which I found very motivating (when in the right group). Additionally, I enjoyed the personalised feedback. This made me feel heard and appreciated by the lecturer."

"Being able to participate [in] the co[ur]se online and at flexible times was critical to me. The badges and point system [were] very motivating!"

While I found the gamification of the course well executed, it did not influence my motivation. For this reason I personally believe, that the effort in creating the graphics and storyline was not well allocated.

"I am not sure how I feel about the point based system. Sometimes it felt like I was mostly trying to optimize the ratio of points earned to time spent and not on maximizing my personal learnings."

Didn't really get the thing with the storyline.

Assessment of implementation

Survey about engagement levels
(autonomy, competence, relatedness)
with control group

→ Qualitative and quantitative data
on the impact of gamification

**Student
testimonials**

**Preliminary
results**

Student surveys

On a scale of 1 (not at all) to 7 (absolutely),

- "I find gamification has made this course engaging": 5.48
- "I would like to participate in gamified courses in the future, too." 5.56

(Details to be published after the completion of the pilot.)



Assessment of implementation

Survey about engagement levels
(autonomy, competence, relatedness)
with control group

→ Qualitative and quantitative data
on the impact of gamification

**Student
testimonials**

**Preliminary
results**

Implementation

Autonomous gamified learning in practice



Teaching
context

Implementation

Evaluation

Autonomy in gamification: A case study

Dr. Réka Mihálka

The Language Center of UZH and ETH Zurich

Conclusion

Implementation

Intro

Background

Summary

- 💡 Solid theoretical foundations for implementing gamification and autonomous learning simultaneously
- 🔄 Prioritizing student autonomy, relatedness, and competence in the learning process helps create a game-like experience, which increases engagement.
- 🔧 Level Up! enables gamification in Moodle.




References

Works cited

All images in this presentation
have been taken from
<https://pixabay.com/>

- Aparicio, A. F. Gutiérrez Vela, F. L., González Sánchez, J. L., Isla Montes, J. L. (2012). Analysis and application of gamification. <https://doi.org/10.1145/2379636.2379653>
- Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. Research Gate. https://www.researchgate.net/publication/247190693_Hearts_clubs_diamonds_spades_Players_who_suit_MUDs
- Deterding, S., Dixon, D., Khaled, R., Nacke, L. (2011). From Game Design Elements to Gamefulness: Defining Gamification. MindTrek Conference. DOI: 10.1145/2181037.2181040
- Landers, R. N. (2014). Developing a Theory of Gamified Learning. Simulation & Gaming. DOI: 10.1177/1046878114563660
- Landers, R. N., Auer, E. M., Collmus, A. B., Armstrong, M. B. (2018). Gamification Science, Its History and Future: Definitions and a Research Agenda. Simulation & Gaming, 49(3), 315–337. <https://doi.org/10.1177/1046878118774385>
- Garland, C. M. (2015). Gamification and Implications for Second Language Education: A Meta Analysis. Master's Thesis. St. Cloud State University.
- Hamari, J., Koivisto, J., Sarsa, H. (2014). Does Gamification Work? — A Literature Review of Empirical Studies on Gamification. DOI: 10.1109/HICSS.2014.377
- Philp, J. & Duchesne, S. (2016). Exploring engagement in tasks in the language classroom. Annual Review of Applied Linguistics, 36, 50–72. <http://dx.doi.org/10.1017/S0267190515000094>
- Rigby, S., Ryan, R. M. (2011). Glued to Games: How Video Games Draw Us In and Hold Us Spellbound. Praeger/ABC-CLIO.
- Robertson, M. (2010). Can't play, won't play. Kotaku. <https://kotaku.com/cant-play-wont-play-5686393>
- Ryan, R. M. and Deci, E. L. (2002). Overview of Self-Determination Theory: An Organismic Dialectical. In R. M. Ryan & E. L. Deci (Eds.), Perspective. Handbook of Self-determination Research (pp. 3–33). University of Rochester Press.
- Ryan, R. M., Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55, 68–78.
- Sailer, M., Homner, L. The Gamification of Learning: a Meta-analysis. Educ Psychol Rev 32, 77–112 (2020). <https://doi.org/10.1007/s10648-019-09498-w>
- Seaborn, K., Fels, D. I. (2015). Gamification in theory and action: A survey. International Journal of Human-Computer Studies, 74, 14–31. <https://doi.org/10.1016/j.ijhcs.2014.09.006>

Summary

-  Solid theoretical foundations for implementing gamification and autonomous learning simultaneously
-  Prioritizing student autonomy, relatedness, and competence in the learning process helps create a game-like experience, which increases engagement.
-  Level Up! enables gamification in Moodle.

References

Autonomy in gamification: A case study

Dr. Réka Mihálka

The Language Center of UZH and ETH Zurich

Conclusion

Implementation

Intro

Background