**Doctoral School
of Business and
Management**

Thesis summary

Péter Ádám Szentesi

Exploring the potential and impact of gamification in business higher education
Ph.D. thesis

Supervisor:

Dr. Ágnes Wimmer, PhD.
professor

Budapest, 2025

Department of Decision Sciences

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Table of contents

I. Research background and justification of the topic

In my research I investigated the potential and impact of gamification in business higher education. Gamification is the use of game elements (or game mechanics) in non-game environment. The aim is to enhance the learning experience of the students involved in the learning process, and consequently his/her motivation. Examples of playful elements are ranking, badges or narratives. The former two are types of feedback on performance, the latter creates a link between students and learning material through a story ("narrative"). The elements of gamification are also pedagogical interventions to support teaching, aiming to increase the effectiveness of knowledge construction by going beyond the limits of frontal teaching. In all cases, the use of game elements provides the student with some kind of motivational driving force and thus has the desired motivational effect. In addition to defining the elements of gamification in education, the mechanism of gamification also had to be examined from the point of view of motivation and how these can be integrated into the educational process. In my research, I placed gamification at the intersection of motivation and pedagogical aspects in such detail that its methodology could practically be transferred to other courses. Based on this, I have mapped the factors that influence the learning experience and have provided evidence about the positive impact of gamification on motivation with a live classroom experiment.

The timeliness and importance of the topic is justified by several economic and social phenomena, which I have structured in my dissertation by using the ecosystem model of education. The economic aspect of gamification can best be described by the spread of its practical applications.

Widely known mobile phone or Microsoft Office applications have gaming elements, such as Duolingo (language learning with rewards and levels), Nike Run (running badges, challenges) or even Microsoft Teams (rewards for teamwork) [1]. From a societal perspective, some researchers believe that the 21st century will be the century of play, where playfulness will take on a dominant cultural form (Deterding, 2015). Play is usually associated with social experiences, enjoyment, imagination, discovery and development. The latter two phenomena are also inherent to learning. Learning in the school system is based on explicit rules and goals, the use of playful elements can provide stronger motivation. The generational characteristics of university students also explain why they may be susceptible to the influencing effects of playful elements. A preference for appealing visual representations, free expression of opinions, and social connectedness and learning in groups (Csillik et al., 2022) are defining characteristics. However, all these are also game mechanics, so that the elements used in gamification are frictionlessly linked to the content consumption and learning habits of young generations

Among the recent changes in thinking about how learning takes place, the learning process has become more learner-centred, and the learner's individual characteristics can also be related to gamification. On the one hand, because the learner is actively involved in the construction of knowledge, and on the other hand, the use of playful elements is explicitly aimed at designing and operating interactive, personalised and individualised processes.

The emergence of gamification in economic and social processes has also led to its introduction in education: it has a major role in several western

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[1] Business impact of gamification estimated at USD 70 billion by 2030 (Dhapte, 2024).

business universities, where gamification as a methodology of business influence is taught in special courses [2].

In Hungary, half a dozen doctoral dissertations on gamification have examined the impact of gamification on culture and society, the acceptance of the phenomenon among teachers and students, or the impact of gamification on specific computer platforms. The international literature on the use of gamification in the live classroom is also relatively scarce, with few articles going into detail on the experiments and phenomena. My research has filled this gap.

II. Used methods

According to Maxwell (2009), the research objectives and questions, the theoretical model behind the examined phenomenon, and the methodology form a coherent system. His logic is well complemented by the pragmatic paradigm that also underpins my research: the choice of methodology is fundamentally influenced by how the phenomenon can be most effectively examined and analysed in the given situation. In my research, I have formulated a coherent, interdependent hierarchy of objectives and questions. The qualitative research began with a literature review of theories. The results prepared the ground for the design and implementation of the playful experiment and the subsequent implementation and analysis of the semi-structured interviews.
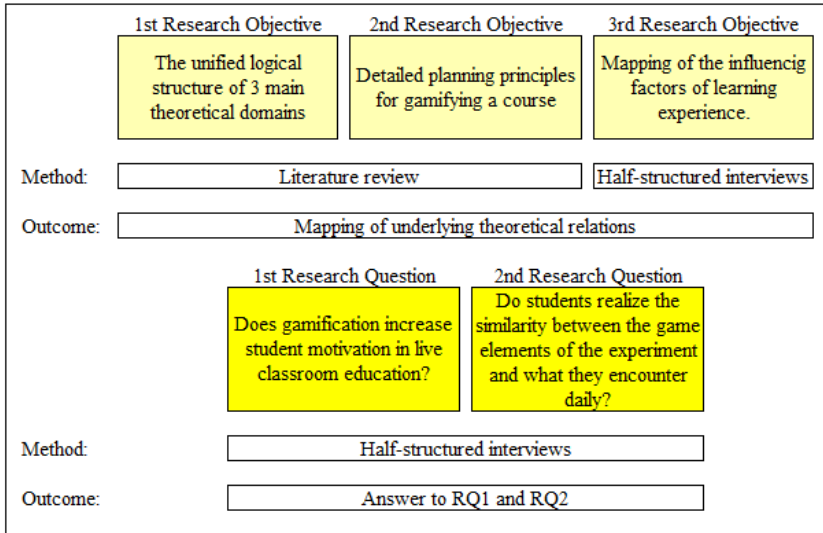
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[2] Waterloo University in Canada, Brighton University in the UK and Liège University in Belgium, Barcelona University in Spain and Michigan State University also offer courses in gamification (Baikins, 2020).

a. Research objectives and questions

My first research objective was to examine the literature on gamification, motivation and related pedagogical interventions, and to identify a common cross-section of these. My second objective was to formulate a detailed design for a gamified course using the previously understood aspects of gamification, motivational features and pedagogical principles. This step was necessary to plan and implement the classroom experiment in my research. The third research objective was to map the students' learning experiences, the results of which provided a solid benchmark for analysing the impact of the playful elements used in the experiment.

My first research question (RQ1) related to the classroom experiment: can gamification in a live contact hour environment increase student engagement and motivation? The second research question (RQ2): After participating in a gamified course, do students recognize the playful elements and equate them with gamification in practice? The exploration of the latter is important because it shows whether the gamified influencing elements widely used in business are consciously recognised by our students? This allowed me to make a statement on the need to make students more aware of such influencing methods. A summary of these is shown in Figure1.

1. figure: Research objectives and questions

	1st Research Objective	2nd Research Objective	3rd Research Objective
	The unified logical structure of 3 main theoretical domains	Detailed planning principles for gamifying a course	Mapping of the influencig factors of learning experience.
Method:	Literature review		Half-structured interviews
Outcome:	Mapping of underlying theoretical relations		

	1st Research Question	2nd Research Question
	Does gamification increase student motivation in live classroom education?	Do students realize the similarity between the game elements of the experiment and what they encounter daily?
Method:	Half-structured interviews	
Outcome:	Answer to RQ1 and RQ2	

Source: the author's own work

b. Literature research

Prior to the literature search, I used selected articles and books based on my own interest and experience to get a general idea of gamification, the motivational theories closely related to it, and the interventions that support education. This also identified areas of focus, and I started structured research on the design, implementation and feedback of gamification in higher education. The research was conducted using Publish or Perish software on Scopus, CrossRef and Google Scholar databases. I have considered the relevance of the articles in terms of number of citations, and continued research based on the principle of saturation. I subjected the analysis and synthesis of the articles to two additional criteria: the intended gamification of the course had to be practically feasible, and the related phenomena had to be possible to examine and verify.

The review of the **gamification literature** focused on collecting the basic elements, exploring the gamification frameworks that integrate them into a logical system, mapping the areas of gamification, and reviewing the design of gamified processes. In total I have collected nearly 100 gamification elements. The practical application of these elements is made easier by the gamification frameworks. The most typical frameworks and their applications in the literature are described in detail in this thesis. The MDA framework (Werbach & Hunter, 2015) distinguishes between game elements, rules and aesthetics. The RAMP model (Marczewski, 2014; Tondello et al., 2019), and the Octalysis (Yu-Kai, 2017) model categorise game elements according to different logic of motivational drivers that affect the user

From a **motivational perspective,** the elements of gamification have a positive effect through influencing the individual's need for autonomy, competence and relatedness, as per the self-determination theory (Ryan & Deci, 2020) which is the most frequently cited motivational theory in gamification research. Seconded by Flow theory (Csikszentmihalyi, 2008), which emphasises the balance of abilities and challenges, as well as the importance of feedback. Both theories are essential for understanding the mechanism of gamification. When examining motivational theories, I also referred to the modern goal orientation theory (Fejes, 2011), which describes learning motivation and basically classifies learners into competence-seeking and competitive categories based on their motivation.

From the **point of view of pedagogical interventions** supporting education, the literature aspect was mainly about conceptual clarification and delimitation of the field. Among these interventions, the literature distinguishes interventions related to tasks, authority, recognition of achievement, grouping (relatedness), and time pressure (Ames, 1992; Fejes,

2009). The detailed exploration of this similarity is related to the first research aim and is an important outcome of this dissertation.

c. The conceptual model of the research and the implementation of the experiment

The theoretical model Landers (2014) outlines for research on gamification shows that educational activity, learner behaviour and motivation influence learning outcomes. The content and method of instruction affects learner motivation, behaviour and learning outcomes. Motivation and behaviour have a profound effect on learning outcomes (motivation is a moderator variable). Gamification is a direct mediating process on motivation, i.e. it is (one of) the causes of changes in motivation. Thus, it also has an indirect moderating effect on learning outcomes. This is because playful elements can make the processing of learning material more interesting and exciting.

2. figure: Theoretical model for gamified education
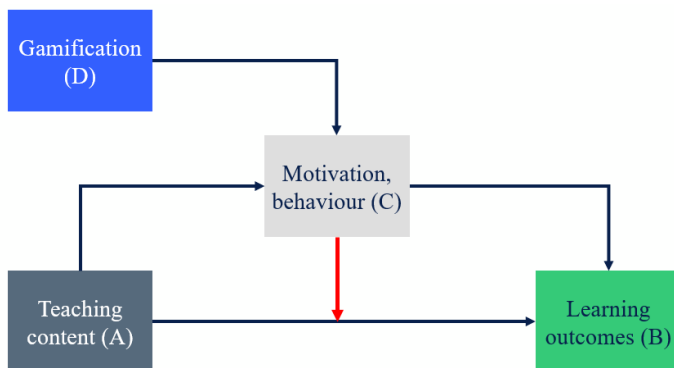
Source: (Landers, 2014) edited by the author

In my research, I investigated the mediator (indirect moderator) effect of gamification in classroom experiments and in the subsequent data collection and analysis.

The gamification of the courses was carried out over several iterations, the game elements were continuously improved and a total of 5 versions were created during the experiments. Students were exposed to a total of 11 different game elements. 165 students participating in two Business Economics, two Decision Theory and two Decision Making Skills courses took part in the gamified lessons (Hungarian and English languages). The complexity of the experiment was that I had to build a new gamification model for each subject and language. This is considerably more complex than experiments in the literature relating to live classroom gamification. Both in terms of design, implementation, or analysis.

In the experiment, students were exposed to two sets of gamified mechanisms. First, they were given individually personalised feedback and evaluation sheets[3] three times during the semester. These included detailed written evaluations of their exams, their scores, their ranking, visual feedback on their performance (badges, graphs) and access to additional content via QR codes. Secondly, they could earn points through in-class activities, which they could redeem individually or as a group for a "service" to support their learning, such as a deadline extension or extra exam consultation. Following the experiments I investigated the perception of the interventions and their (perceived) impact on the student experience and thus on motivation.

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[3] An illustration of the player feedback cards is available online via a link provided in the annex of this document.

d. Data collection and analysis methods

I collected the research data by conducting semi-structured interviews and analysing them. According to Horváth and Mitev (2015), the aim of qualitative research is to analyse the observed phenomenon in each context with as much detail as possible, in order to draw detailed and meaningful conclusions. Moser and Korstjens (2017) add that in this way the natural context and the subject of the participants can be considered. In this way, their experiences can be effectively explored in qualitative research. According to Vasileiou et al. (2018) for exploratory research, 20-30 interviews are sufficient for a successful study. In my research, I interviewed 51 students, and the transcripts of the audio material amounted to almost 200 pages. During the interviews, I asked questions about factors that influenced the students' learning experience on the one hand, and about their perceptions of gamification on the other. I tried to avoid influencing the respondents as much as possible by the way how the questions were asked.

The interviews were analysed with thematic analysis method using Nvivo software. During the thematic analysis (Castleberry & Nolen, 2018; Kiger & Varpio, 2020) I collected the phenomena (codes) discovered in the content of texts in all interviews by repeatedly reading and comparing them. I then grouped the codes into a logical and hierarchical system and based on these, I formulated categories describing the essential message of the research, which the methodology refers to as themes.

III.   Scientific results of the thesis

In my dissertation, I examined a timely and important phenomenon in society, business and education. I have formulated three objectives to be achieved and, building on these, two research questions to be answered. The

first objective was to better understand the mechanism of gamification, and to formulate a unified logic framework encompassing gamification, motivational theories and pedagogical interventions. My second objective was to create a design process that would allow the creation of an appropriate and effective way to gamify a course, both in terms of pedagogical interventions and gamification processes. My third objective was to explore the factors that influence students' learning experiences. In classroom experiments based on these findings, I sought to answer (RQ1) whether gamification in a live classroom environment increases student motivation. Finally, I wanted to see whether (RQ2) after the gamification experiment, students consciously recognised that they had encountered the same interventions as they had with mobile apps, office software (and many offline processes).

From the 51 English and Hungarian interviews, I identified 3 themes, 17 code categories and 120 codes. These are supported by about 1100 quotes from a total of 196 pages of text. The main message across the interviews is that the students' perceptions of gamification were clearly positive, with the vast majority reporting an improved learning experience and motivation.

For the first research objective, after synthesizing the gamification elements, frameworks, motivational theories and pedagogical interventions identified in the literature review, I created a comprehensive table[4] in which I paired the experimental gamification elements with the theories. **This table can be used** to help educators and researchers of the topic to identify any of the other elements of the relationship from any of the directions (i.e. motivation, play frameworks, or pedagogical interventions). In this way, it helps **to design an effective gamified course**.

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[4] The table can be found in the Annex to the Thesis Summary.

I have formulated steps in the design process as a response to the second research objective. Here I think it is important to emphasise that the literature on gamification does not have its own theory of education. Gamification always makes the functioning of a target process more efficient, in the case of my research this is the case of education. That is, the design steps highlight separately didactic design principles, as well as general game design principles. The description of the process can be easily used in practice if one has a general knowledge of the literature or of gamification.

The third research objective was met by exploring the factors that influence students' learning experiences[5]. Using semi-structured interviews, I highlighted factors that influence learning experiences, including (*a) the role of community, team and its diversity, (*b) the importance of student autonomy, (*c) the prominence of competition and social comparison, and finally (*d) the importance of feedback. **All this is in line with motivational literature**. The aim of my experiment was to influence these factors and measure the effect. **The associated mind map shows the complex system of factors influencing the learning experience and the related gamification elements that influence them.**

The tables and diagrams resulting from the first three research objectives capture the relationship between gamification and the factors influencing the learning experience as well as the design principles. All these are done in a much more comprehensive and detailed way than in the literature, and in my opinion these reveal a novel relationship between gamification, motivation and pedagogical interventions.

In relation to the first research question, I examined changes in students' learning experience and motivation. **The game element associated**

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[5] The detailed mind map is available in the Thesis Summary Annex, and it is available online as well.

with (*a) **community** and team diversity was **the way the groups were set up**, which meant grouping of students based on professional tests related to the topic in seminar classes. So that students could experience working in diverse groups, while at the same time the logic of the grouping functioned as a narrative and contributed to a deeper understanding of the topic. **The perception of this was clearly useful and positive according to the students** in the interviews.

In **relation to (*b) student autonomy**, students could interchange (buy from) their points individually and collectively (by voting) in class. The freedom of choice and the excitement of the game were highly appreciated and **were described as having a clear positive impact.**

I used **badges and rankings to influence competition (*c) and community comparison** related perception. Most students experienced the use of these in a positive way. However, for some students who did not like competition, these mechanics were not attractive. However, even by considering the critical opinions as well, **the interviews reported a positive impact of these game mechanics.**

The **importance of feedback** (*d) was explored through the students' opinions on the individual feedback forms. Students were **clearly very positive about the feedback sheets**. Their words described amazement, the importance of personal attention, the dedication of the lecturer, and the usefulness of summarizing and evaluating their activities.

Overall, ninety percent of the codes in the student interviews supported that gamification had enhanced their learning experience and motivation. Only one tenth of the opinions were neutral or critical. **The answer to the first research question (RQ1) is yes, gamification in live classroom training can increase student motivation.**

With the **second research question** I investigated whether the **students recognise the gamification elements** I used to influence them while participating in the gamified class experiment. After all, they have already encountered such influencing mechanisms daily. They will continue to be influenced in the future, but perhaps as process designers they will also be able to use elements of gamification themselves. In my experiments only a fraction of the students recognised the similarities between the game mechanics they saw and the game elements they encounter daily. **The answer to the research question is that the students in the experiment did not recognise the playful elements they were influenced by.**

IV. Conclusions and future research areas

In my dissertation, I explored in detail the interrelationships and connections between three areas: gamification, motivational theories and pedagogical interventions. Building on this, I have documented in meticulous detail the design and implementation of gamification in my courses, pointing the way forward for educators wishing to incorporate gamification into their training and for researchers wishing to investigate it. Finally, I have shown that „offline" gamification of a live classroom course can enhance the learning experience and motivation. The experimental part of the research involved 165 students from 3 courses over 8 semesters. The empirical analysis of their experience was carried out through a thematic analysis of the responses recorded during semi-structured interviews. In total, I identified three themes and 120 codes in the interview transcripts of about 200 pages. I was able to answer the research questions with a total of 1100 quotes behind the codes and themes.

Building upon the findings I propose a few other exciting directions for research on gamification. Such areas could be to measure the effect of

game elements totally independently from each other, to develop a faster (quantitative) methodology to measure and analyse the motivational effect and, in my opinion, to investigate the impact on learning outcomes beyond the motivational effect of gamification.

V. Main literature references

Ames, C. (1992). Classrooms: Goals, Structures, and Student Motivation. *Journal of Educational Psychology*, *84*(3), 261-271. https://doi.org/10.1037/0022-0663.84.3.261

Baikins, P. (2020, June 1). *List of Masters in Gamification Courses*. https://petejenkins.com/list-of-masters-in-gamification-courses/

Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, *10*(6), 807–815. https://doi.org/10.1016/j.cptl.2018.03.019

Csikszentmihalyi M. (2008). *Kreativitás: A flow és a felfedezés, avagy a találékonyság pszichológiája*. Akadémiai Kiadó.

Deterding, S. (2015). The ambiguity of games: Histories and discourses of a gameful world. In *The Gameful World: Approaches, Issues, Applications*. MIT Press.

Dhapte, A. (2024). *Gamification Market Size, Share, Trends | Forecast— 2032*. Market Research Future. https://www.marketresearchfuture.com/reports/gamification-market-11313

Fejes J. B. (2009). A tanulási motiváció fejlesztésének lehetőségei. In Zoltán V. (Ed.), *Bölcsészműhely 2009.* (pp. 43-53.). JatePress.

Fejes, J. B. (2011). A tanulási motiváció új iránya: A célorientációs elmélet. *Magyar Pedagógia*, *111.évf.*(1), 25–51.

Horváth, D., & Mitev, A. (2015). *Alternatív kvalitatív kutatási kézikönyv*. Alinea kiadó.

Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, *42*(8), 846–854. https://doi.org/10.1080/0142159X.2020.1755030

Landers, R. N. (2014). Developing a Theory of Gamified Learning: Linking Serious Games and Gamification of Learning. *Simulation & Gaming*, *45*(6), Article 6. https://doi.org/10.1177/1046878114563660

Marczewski, A. (2014). *Game Mechanics in Gamification – Revisited*. Gamified UK - #Gamification Expert. https://www.gamified.uk/2014/11/03/game-mechanics-gamification-revisited/

Maxwell, J. (2009). Designing a Qualitative Study. In L. Bickman & D. Rog, *The SAGE Handbook of Applied Social Research Methods* (pp. 214–253). SAGE Publications, Inc. https://doi.org/10.4135/9781483348858.n7

Moser, A., & Korstjens, I. (2017). Series: Practical guidance to qualitative research. Part 1: Introduction. *European Journal of General Practice*, *23*(1), 271–273.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Tondello, G. F., Mora, A., Marczewski, A., & Nacke, L. E. (2019). Empirical validation of the Gamification User Types Hexad scale in English and Spanish. *International Journal of Human-Computer Studies*, *127*, 95–111. https://doi.org/10.1016/j.ijhcs.2018.10.002

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*(1), 148. https://doi.org/10.1186/s12874-018-0594-7

Werbach, K., & Hunter, D. (2015). *The Gamification Toolkit_ Dynamics, Mechanics, and Components for the Win.pdf*. Wharton Digital Press. http://wdp.wharton.upenn.edu/book/for-the-win/

Yu-Kai, C. (2017). *Actionable Gamification*. Octalysis Media.

VI. List of the author's own and co-authored publications in this field

Journals

Buzady, Z., Wimmer, A., Csesznak, A., & Szentesi, P. (2024). Exploring flow-promoting management and leadership skills via serious gaming. Interactive Learning Environments, 32(2), 757-771.

Wimmer, A., Buzady, Z., Csesznak, A., & Szentesi, P. (2022). Intuitive and analytical decision-making skills analysed through a flow developing serious game. Journal of Decision Systems, 31(sup1), 4-17.

Buzády, Z., Wimmer, Á., Csesznák, A., & Szentesi, P. (2022). A munkahelyi flow-állapotot elősegítő vezetői képességek elemzése a komoly játék eszközével. Vezetéstudomány/Budapest Management Review, 53(3), 19-33.

International Conferences

Szentesi Péter (2020): The impact of gamified education on learning motivation. In: Keszthelyi András, Szikora Péter, Fehér-Polgár Pál (ed.): 18th International Conference on Management, Enterprise, Benchmarking, Óbudai Egyetem, pp. 201-211.

Hungarian Conferences

Szentesi Péter (2019): Játékosítás az üzleti és menedzsment oktatásban. In: Csillik Olga (szerk.): Módszertani mix - Kitekintés a kárpát-medencei felsőoktatási intézmények módszertani gyakorlatára, Budapesti Corvinus Egyetem, pp. 183-204.

VII.   Tables and figures shared to support thesis summary

First research objective: gamification–motivation–pedagogy in one logical structure:

https://drive.google.com/drive/folders/1rKjH63DvopKjZlG7ziYU9aG82QlzfT3l

List of all 98 identified gamification elements:

https://docs.google.com/document/d/1Li0aEGpBYOwkIN96Yv3h1M6JX6Za9di6/edit?rtpof=true#heading=h.gjdgxs

Second research objective: detailed planning principles for gamification of a university course:

https://drive.google.com/drive/folders/1B23RVNyf69ZG_l6vZ7F9EuOTUIf_K2WC

Third research objective: Mind map of factors influencing learning experience and their corresponding gamification mechanics:

https://drive.google.com/drive/folders/1s5Ra-gKddE5xjFhBaGZ3scqo8wc8OnLS

RQ1: samples of gamified feedback sheets:

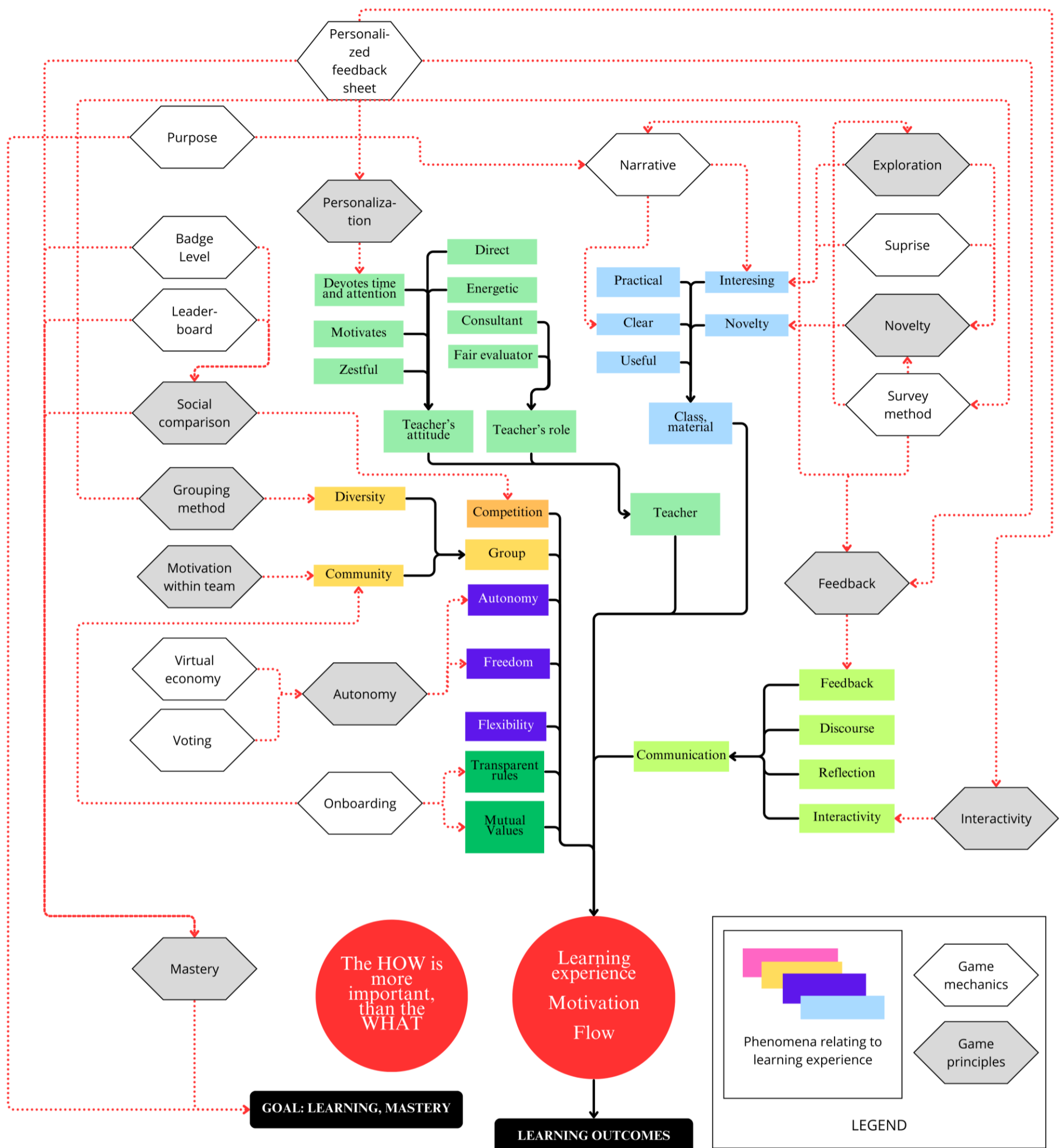https://docs.google.com/document/d/1M-7Oqg391bYO-XuYh8KWp2Kv5rokyjMF/edit#heading=h.gjdgxs

VIII.   Annex from next page

		Game elements used in the experiment	Badges	Leaderboard	Levels	Virtual economy	Autonomy	Personalization	Feedback	Progress levels	Voting, voice charing	Onboarding	Narrative	Surpriuse
Gamification frameworks	RAMP	Relatedness		√		√								
		Autonomy				√	√	√				√		
		Mastery	√	√	√					√				
		Purpose	√			√					√	√	√	√
	HEXAD	Socializer												
		Free Spirit					√	√						
		Achiever				√				√				
		Player	√	√										
		Philantropist												
		Disruptor										√		
		General game mechanics								√		√	√	√
	MDA	Mechanics					√	√			√	√		
		Dynamics				√			√				√	
		Game element	√	√	√					√				√
	Octalysis	Epic meaning										√	√	
		Accomplishment	√	√	√					√				
		Empowerment					√		√					
		Ownership	√			√		√						
		Social influence		√							√			
		Scarcity		√										
		Unpredictability												√
		Avoidance												
Self determination theory	Psychological needs	Autonomy				√	√	√			√	√		√
		Competence, mastery	√	√	√				√	√		√		√
		Relatedness		√		√				√		√	√	
Goal orientation theory of learning	Mastery	Gain mastery	√		√	√	√		√		√	√	√	
		Avoid "non-mastery"			√					√		√		√
	Competition	Comparison goal	√	√		√		√		√	√			
		Avoiding negative comparison goal	√								√	√		
Pedagogical interventions	Task	Task				√	√	√	√			√	√	√
	Authority	Authority					√	√	√			√	√	√
	Recognition	Recognition	√							√				
	Grouping	Grouping		√		√					√			
	Evaluation	Evaluation	√	√	√				√	√				√
	Time	Time												

Forrás: saját szerkesztés

b. Annex: Mind map relating to the factors influencing learning experience and the respective gamification elements

Forrás: saját szerkesztés