

BASELINE ANALYSIS REPORT



LEARN TO PLAY PROJECT

2024-1-SK01-KA220-HED-000252451 LEARN TO PLAY FOR
THE FUTURE



Co-funded by
the European Union





BASELINE ANALYSIS

The present report concerns the analysis of current practices in the Game-Based Learning (GBL) approach, Gamification Techniques (GT), and Educational Game Development (EGD) programs in higher education institutions. It is divided into several sections, each addressing a different aspect of the analysis. Collectively, these sections provide a detailed examination of the status quo of game-based learning and gamification in the partner countries.



The first section focuses on the analysis of institutional documents, such as study programs, subject syllabi (i.e., syllabi of study programs at universities that include GBL or EGD courses), and policies related to GBL, GT, and EGD, as well as other relevant documents. Initially, the analysis will focus on data from each partner country, followed by a comparative evaluation of the findings. Based on this comparison, general conclusions will be drawn.

The second section follows a similar structure but differs in scope. It focuses on research papers related to GBL, GT, and EGD that aim to identify findings on their effectiveness and the challenges associated with their implementation.

PART 1

Report on the Integration of GBL, GT, and EGD in Higher Education: Slovakia

This report assesses the current state of Game-Based Learning (GBL), Gamification Techniques (GT), and Educational Game Design (EGD) in higher education curricula in Slovakia. The analysis is based on institutional policies and frameworks that support or hinder their adoption, providing a holistic view of the educational and administrative landscape related to these innovative teaching strategies.

The analysis of study syllabi from various Slovak universities and faculties reveals the following patterns:



In Slovakia, out of the 44 analyzed documents, some explicitly mention Game-Based Learning (GBL), Gamification Techniques (GT), or Educational Game Design (EGD) as part of their curriculum. Some courses, such as Digital Learning Through Games and Education in Digital Games at FMK UCM, as well as Games in Education, Upbringing, and Therapy at VSMU, place a strong emphasis on GBL, requiring students to design educational games. Other programs, such as Teaching Language Resources, incorporate game-based activities like role-play and didactic games; however, they lack structured methodologies for implementing GBL or gamification in a pedagogically systematic manner. The Comenius University in Bratislava, at the Faculty of Education, has as many as 8 courses (i.a. Curious Learning 1 & 2; Applied Digital Media in Primary Education; Digital Literacy; Children's Programming Languages), described in the matrixes that include elements of game-based learning, gamification technique and other innovative classroom practices that support critical thinking and problem solving skills. Other analysed documents, overwhelmingly show lack of GBL or GT related topics or classroom practices.

Although some programs integrate interactive learning approaches, such as project-based learning, they do not explicitly reference GBL or GT. The Virtual Reality course at FPVal UKF, for example, includes VR projects that could be aligned with GBL principles, but these are not formally categorized within GBL or GT frameworks. Furthermore, most programs that include GBL components tend to focus primarily on digital tools rather than pedagogical methodologies that ensure a structured and research-backed integration of game-based techniques.

In terms of explicit methodologies, only a handful of courses adopt a structured approach. Project-based learning is present in some courses, such as Digital Learning Through Games, where students develop their own educational games. Additionally, case studies of digital educational games are utilized in certain syllabi, but there is no overarching framework to systematically integrate these methodologies across different curricula.

A general lack of evidence-based GBL practices is evident throughout Slovak higher education programs. Most courses do not incorporate research-backed methodologies for game-based learning. While some reference adaptive learning, simulations, or serious games, they do so only as supplementary teaching tools rather than as core components of structured pedagogical strategies.

At the policy level, there are significant national and institutional gaps. No direct government or university policies explicitly mandate or encourage the adoption of GBL, GT, or EGD within curricula. While policy documents such as the National Strategy for Research, Development, and Innovation 2030 and the Education Informatics Programme 2030 mention digital education, they lack clear directives specifically related to game-based learning.

In terms of digital infrastructure and institutional readiness, several national strategies, including the Lifelong Learning Strategy and the National Curriculum for Primary Education, promote digital competencies. These initiatives could indirectly support GBL adoption. However, there are no dedicated funding mechanisms or faculty development programs designed to systematically integrate GBL into Slovak higher education.

One of the most significant barriers to effective GBL implementation is the absence of professional development programs for faculty members. Training in game-based teaching techniques is largely missing from both national strategies and university policies. No institutional guidelines exist for integrating GBL into assessment strategies or curriculum design, making it challenging for educators to adopt and implement these innovative teaching methods in a structured and sustainable manner.



Conclusion

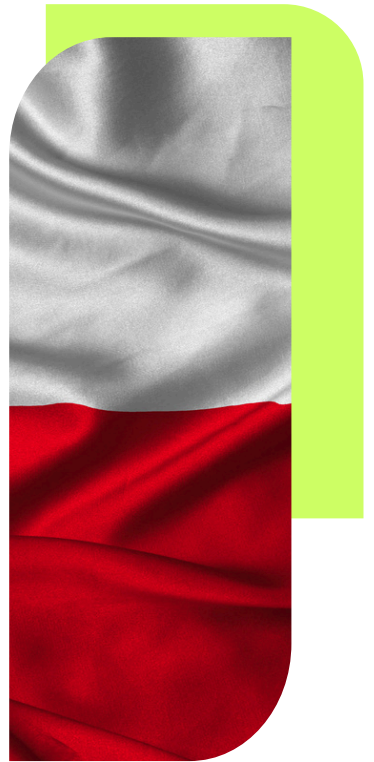
Even when GBL/GT concepts are present, they are not officially categorized under structured pedagogical methodologies. Courses that mention game-based techniques do not necessarily include research-backed methodologies for their implementation. Moreover, there are no direct policy incentives that encourage universities to implement GBL or GT in Slovakia.

What is visible, is the lack of any structured training programs for faculty members to develop GBL-based courses. It seems that the limited awareness and expertise in designing gamified educational content, may be considered a significant obstacle in effective implementation of GBL, GT and/or EDG.

Report on the Integration of GBL, GT, and EGD in Higher Education: Poland

This part of the report evaluates the current state of Game-Based Learning (GBL), Gamification Techniques (GT), and Educational Game Design (EGD) in higher education related documents in Poland. It examines both institutional policies and study programs to assess the extent of their integration and identify the barriers and opportunities for expansion.

While analysing institutional documents, only few courses were revealed across the Polish educational landscape that pertain to GBL or GT courses being conducted, and in relation to institutional documents, these support the GBL, GT and EDG indirectly. In this area, the following were identified in the analysis:



Poland has various national strategies and legislative frameworks, however, they only focus on the support the integration of technology and digital competencies, which can facilitate the adoption of GBL, GT, and EGD in educational settings in an indirect way. These documents include:

- 2016 Education Act: This law includes provisions for developing students' skills in efficient use of information and communication technologies (ICTs). It does not explicitly mention GBL or gamification but provides a framework for digital education integration.
- 2018 National Cybersecurity Act: It introduced amendments to the Education Act, emphasizing the need for safe use of ICT in education. This is relevant for GBL, as cybersecurity considerations are critical for online and gamified learning environments.
- 2020-2030 Integrated Skills Strategy (Zintegrowana Strategia Umiejętności 2030 - ZSU 2030): It aims to improve digital competencies across all levels of education. It also calls for the integration of ICT and AI in formal education, which could foster the growth of gamification in learning.
- 2020 Policy for the Development of Artificial Intelligence (AI Policy): One of its objectives is further integrating digital technologies into the education process. AI-powered adaptive learning and interactive educational applications align with GBL methodologies.
- 2014-2020 Digital Poland Program & 2021-2027 European Fund for Digital Development: These programs support digitalization efforts, including developing digital competencies for students and teachers. Digital infrastructure investments can enable the implementation of game-based learning tools.
- National Educational Network (OSE, Ogólnopolska Sieć Edukacyjna): Launched in 2017, this initiative ensures safe, broadband internet connectivity for schools. It indirectly supports the integration of online game-based learning environments in schools.

There are several courses related to GBT, GT at various polish universities that were identified:

- The "Gamedec: Game Studies & Design" program at Kazimierz Wielki University is among the few dedicated to game studies and design. It follows IGDA Curriculum Framework, offering a structured approach to interactive storytelling, serious games, and interdisciplinary game studies.
- "MANAGER BOB IN – A Gamified Course in Business Management" (Rzeszów University of Technology) employs a game-based simulation where students engage in structured challenges and role-based learning.
- The "Gamification in Higher Education: A Case Study" at Lublin University of Technology demonstrated that gamification improves student engagement and attendance.
- The FGPE Plus project (University of Szczecin) focuses on gamified programming education, creating open-source gamified exercises and interoperable learning tools. University of Warsaw offers an elective course on Gamification, which reviews game mechanics and their applications across industries.

In Poland, the integration of Game-Based Learning (GBL), Gamification Techniques (GT), and Educational Game Design (EGD) into educational frameworks has been primarily driven by individual institutions and educators rather than through comprehensive national policies. However, there have been notable governmental and institutional initiatives that reflect a growing recognition of the educational potential of games and gamification. In a somewhat pioneering move, the Polish government added the video game "This War of Mine" to the official school reading list for high school students in 2020. This initiative aimed to support the teaching of sociology, ethics, philosophy, and history, marking the first instance globally where a video game was officially recognized as an educational resource.

In general, some courses focus on game-based simulations (Business & Management), while others incorporate game mechanics in interdisciplinary ways (Programming & IT, Language Learning, and Digital Media). However, there is no standard framework across disciplines, and most implementations occur in isolated courses rather than university-wide initiatives.

Although GBL is utilized in some courses, most higher education institutions in Poland lack a system-wide policy or support structure for adopting game-based methodologies. Some programs follow international frameworks (e.g., IGDA for game design courses), but most disciplines lack clear gamification standards.

As for the study programmes at the pedagogy and teaching specializations, there are no course that would target GBL, GT or EDG explicitly and implicitly. Only the course in Extended Didactics and New Methodologies mentions gamification and game-based learning as part of the teaching content.

Conclusions



To summarize, there are no Formal Government Policy Supporting GBL/GT Adoption that would be identified in the analysis. While institutions experiment with gamification, no widespread institutional or funding mechanisms support faculty adoption. University-Level initiatives exist but are fragmented. Some institutions (e.g., University of Szczecin's FGPE Plus project) receive European funding (Erasmus+) for gamified learning projects. However, most implementations are isolated projects rather than integrated educational strategies. Moreover, there are no institutional training programs were found that specifically equip faculty with the skills needed to integrate GBL into curricula. Universities rely on individual faculty-led initiatives, rather than structured professional development programs. The governmental and institutional documents reveal a lot of initiatives on improving the scope of internet access, and general ICT and STEM related practices, though these do not directly influence GBT, GT and EDG.

PART 1

Report on the Integration of GBL, GT, and EGD in Higher Education: Finland

This report evaluates the current state of Game-Based Learning (GBL), Gamification Techniques (GT), and Educational Game Design (EGD) in higher education curricula in Finland. The assessment focuses on curriculum integration, institutional policies, and faculty training, based on documents from Xamk University of Applied Sciences (South-Eastern Finland University of Applied Sciences).

The analysis concerns only two documents provided to the analysis. One concerns pedagogical training for staff and teachers – an institutional initiative and a study programme in Game Design.

1. The dedicated Degree Programme in Game Design explicitly integrates GBL, GT, and EGD into its curriculum. Students learn the principles of game design, user experience design, and digital tools, preparing them for game development, gamification, and game-based learning contexts. However, gamification is only mentioned as a learning objective and is not a standalone course within the curriculum.
2. The Pedagogical Training for Staff and Teachers at Xamk includes a 5-hour module on gamification, where teachers are introduced to practical gamification tools, such as Miro, Kahoot!, and digital magnetic poem games. Faculty members are encouraged to apply gamification in their own courses, but there is no structured framework for its integration across disciplines.

The data provided does not allow for a more general analysis regarding the national policy on EGD, GBT and GT.



COMPARATIVE ANALYSIS

of

GBL, GT, and EGD Integration in Higher Education: Slovakia, Poland, and Finland

The analysis of higher education policies and curricula in Slovakia, Poland, and Finland regarding Game-Based Learning (GBL), Gamification Techniques (GT), and Educational Game Design (EGD) reveals both common challenges and country-specific trends. The findings highlight the extent to which these methodologies are incorporated into higher education and the existing barriers preventing their full adoption.

Slovakia has limited explicit integration of GBL/GT/EGD in higher education curricula, with a lack of structured methodologies, faculty training, and policy support. Poland exhibits more fragmented but promising implementations, with individual institutions incorporating gamification into specific courses. However, no comprehensive policy or standardized framework exists.

Finland presents a structured Game Design program but does not integrate gamification as a formal course. Faculty training includes a brief gamification module, yet no national strategy for GBL/GT/EGD has been provided for the analysis.

Recommendations for Developing a Game-Based Syllabus



Establish a Structured Framework for GBL/GT Integration, which entails the development of a clear taxonomy of GBL, GT, and EGD methodologies that can be used consistently across disciplines. Next step concerns the need to define learning objectives that align with educational game design principles, ensuring a balance between content delivery and interactivity.



Faculty Training and Professional Development, which concerns the need for the introduction of mandatory faculty training on game-based teaching techniques to increase awareness and expertise – especially those teachers who are going to be responsible for running the courses.



Systematic Implementation of GBL Across Disciplines, which can concern the development of scalable gamification models that can be adapted across different academic disciplines – syllabi that can be easily modified to meet the demands of other specialty teachers. A case in point concerns the promotion of inter-institutional collaborations to share best practices and resources for game-based learning development.



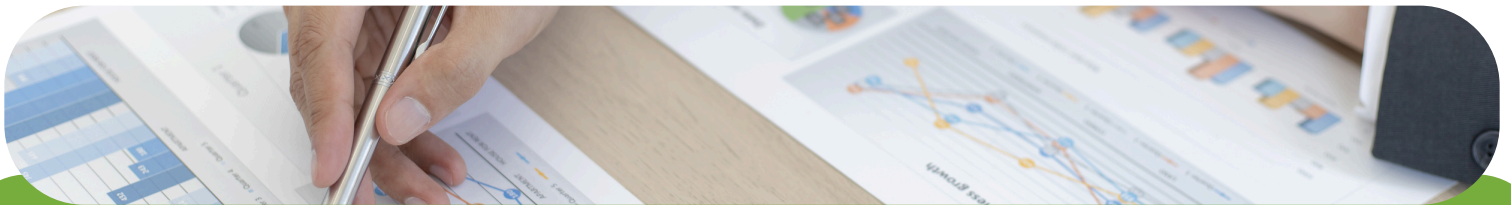
The last recommendation concerns the already established plan to pilot programs to evaluate the effectiveness of gamified learning experiences before full-scale implementation, as is the aim of the project.



Finally, project partners should use learning analytics to assess student engagement and performance in game-based curricula.

Conclusion

The findings indicate that while there are promising developments in game-based education, higher education institutions in Slovakia, Poland, and Finland lack a systematic and policy-driven approach to integrating GBL, GT, and EGD. A game-based syllabus should be developed with a clear framework, faculty training programs, policy support, and cross-disciplinary applications to ensure its successful implementation.



PART 2

Identification of best practices, challenges, and gaps.

SLOVAKIA

The research corpus, provided by the project teams from Slovakia, on Game-Based Learning (GBL), Gamification (GT), and Educational Digital Games (EDG) highlights both their educational benefits and significant challenges in implementation. Across disciplines such as STEM education (Gui et al., 2023), second language acquisition (Dixon et al., 2022), computational thinking (Lu et al., 2022), and teacher training (Sirotová et al., 2021), these methodologies have demonstrated varying degrees of success. However, limitations such as teacher readiness, resource constraints, and gaps in long-term impact studies persist. This analysis synthesizes findings on challenges in GBL/GT/EDG implementation and outlines future research directions, particularly concerning syllabus creation and targeted interventions. Below is a detailed presentation of the findings with the focus on positive impact of GBL & GT interventions, followed by challenges and suggestions for syllabi creation.

Meta-analyses comprised studies conducted by Cai et al. (2022), Chen et al. (2020), Dixon et al. (2022), Gui et al. (2023), Hao et al. (2022), Lei et al. (2022), Lu et al. (2022), Mao et al. (2021), Sailer & Homner (2019), Tokac et al. (2019), Tsai & Tsai (2020), Zhang et al. (2022), and Lu et al. (2022). Mao (2021) also conducted a meta-analysis, providing quantitative measures of GBL's effectiveness across different subjects.

Empirical research was conducted by All et al. (2016), Hayak & Avidov-Ungar (2020), and Marklund & Taylor (2016), who used interviews and observational data to assess teacher perceptions of GBL implementation. Mixed-methods research was conducted by Luo (2021) and Van Gaalen et al. (2021).

Systematic reviews were conducted by Alotaibi (2024), Chen et al. (2023), Chiotaki et al. (2023), Christopoulos & Mystakidis (2023), Greipl et al. (2020), Nimboue (2019), Fernando and Premadesa (2024), Van Gaalen et al. (2022), Vandercruysse et al. (2012), synthesizing existing findings on GBL effectiveness and best practices.

Quasi-experimental studies were conducted by Sirotová et al. (2021) and Van Gaalen et al. (2022), who used experimental designs to compare control and experimental groups in GBL-based interventions.

As for the benefits, Sailer & Homner (2019) conducted a meta-analysis showing that gamification had small positive effects on cognitive ($g = 0.49$), motivational ($g = 0.36$), and behavioral learning outcomes ($g = 0.25$). They found that competition combined with collaboration improved learning outcomes more than competition alone. Additionally, games with fictional elements enhanced behavioral learning, reinforcing the idea that narrative-driven game-based approaches can have educational benefits.

Alotaibi (2024) found that GBL significantly improved cognitive ($g = 0.46$), social ($g = 0.38$), emotional ($g = 0.35$), motivational ($g = 0.40$), and engagement outcomes ($g = 0.44$). This indicates a broad range of benefits beyond academic performance.

Gui et al. (2023) provided evidence that GBL significantly outperformed traditional instruction in STEM ($g = 0.624$), with the largest effects seen in strategy-based games ($g = 1.84$). This suggests that the type of game used matters, with strategy and puzzle games being more effective for cognitive skills than action or simulation games.

In computational thinking, Lu et al. (2022) found that GBL had a large effect ($g = 0.677$), particularly when role-playing and action-based games were used. However, they noted that long-term retention was not well studied, highlighting a research gap.

Tokac et al. (2019) analyzed GBL in mathematics education and found a small positive effect ($g = 0.13$). They attributed this to short intervention durations and an over-reliance on gamification mechanics rather than deep instructional integration.

In science education, Lei et al. (2022) reported that GBL had a strong effect ($g = 0.705$), particularly for primary school students. They also found that game duration was a key factor, with 4-hour to 1-week interventions being the most effective.

Dixon et al. (2022) found medium effect sizes for second language (L2) learning in game-based environments ($d = 0.50 - 0.95$), particularly in vocabulary acquisition. However, they noted that long-term retention advantages over traditional methods were unclear.

Cai et al. (2022) showed that scaffolding in GBL significantly improved learning outcomes ($g = 0.43$), with adventure and puzzle games producing the strongest effects. Interestingly, individual scaffolding was more effective than collaborative scaffolding.

Mao et al. (2021) reported that GBL had a strong effect on students' critical thinking ($g = 0.863$), with role-playing and design-based games being the most effective. However, cultural differences played a role, with larger effects observed in collectivist cultures.

Apart from the benefits, many studies cited issues with small sample sizes and inconsistent research methodologies. All et al. (2016) argued that there is no standardized framework for evaluating GBL effectiveness, leading to high variability in study outcomes.

Van Gaalen et al. (2021) found that competition in GBL environments can sometimes lead to anxiety and disengagement, particularly among students who struggle with peer comparison. This suggests that while competition may work well in structured environments (e.g., STEM education), it can be counterproductive in collaborative or creative disciplines, yet other studies show a positive impact of cooperation and competition on students' outcomes (Chen et al., 2020), yet not in all game domains.

Sirotová et al. (2021) conducted a quasi-experimental study on serious games in teacher education and found that students using serious games had 67% more positive perceptions of their teaching practice. However, the study was limited to a single university, raising concerns about generalizability.

Greipl et al. (2020) highlighted the lack of coherent research on how game mechanics influence learning, with many studies failing to go beyond academic performance to measure social and cognitive effects.

As for the teachers' preparedness and institutional support, Hayak & Avidov-Ungar (2020) conducted semi-structured interviews with teachers and found that lack of training, technical infrastructure, and administrative support were major barriers to GBL adoption. They reported that teachers often lack confidence in integrating digital games into curricula, leading to hesitation and inconsistent implementation. The decision to adopt a GBL tasks is connected with teachers personal motivation to do so, rather than any form of institutional support, and it varies across career stage.

Marklund & Taylor (2016) conducted a case study on GBL in classrooms and identified three major teacher roles: curriculum design, infrastructure management, and classroom facilitation. They found that teachers often struggle with balancing engagement and instructional depth, leading to students playing for entertainment rather than learning.

Fernando & Premadesa (2024) reviewed GBL in educating Generation Alpha and found that while adaptive gamification showed promise, long-term studies on effectiveness were lacking. They emphasized the need for institutional support and investment in scalable GBL platforms.



CONCLUSIONS

The research findings confirm that GBL and GT have significant positive effects on cognitive, motivational, and engagement outcomes, with stronger effects observed in personalized, scaffolded, and adaptive game-based interventions. However, methodological inconsistencies, lack of longitudinal data, and teacher readiness remain major challenges.

Future research should focus on:

1. **Longitudinal studies to determine the sustained impact of GBL on learning retention.**
2. **Standardized frameworks for assessing game-based interventions across disciplines.**
3. **Scalable implementation strategies that provide institutional support and teacher training.**

While GBL is not a universal solution, its effectiveness depends on game type, instructional design, and learner characteristics. The studies suggest that well-designed GBL and GT interventions can significantly enhance student learning, provided that pedagogical and institutional challenges are addressed.

PART 2

Identification of best practices, challenges, and gaps.

Gamification and game-based learning (GBL) have gained increasing attention in Polish higher education as strategies for improving student engagement, motivation, and learning outcomes. While gamification applies game-like elements such as points, leaderboards, and challenges to non-game contexts, GBL involves the use of actual games as a primary instructional method (Mytnik, 2025). In Polish higher education, universities are increasingly experimenting with both strategies to create interactive, engaging, and student-centred learning experiences (Zielińska-Nowak, 2023). Various disciplines—including language learning, STEM education, business studies, and distance education—have implemented gamified curricula and educational games (Talaczyńska, 2023; Woźniak-Zapór, 2018). This systematic review synthesizes findings from sixteen empirical studies, case studies, and conceptual frameworks examining the implementation of gamification and GBL in Polish universities and secondary schools. The results indicate that these approaches foster active participation, enhance knowledge retention, and encourage self-directed learning. However, several challenges hinder their full integration, including high instructor workload, technological limitations, student scepticism, and the risk of diminishing long-term effectiveness.

Methodology

A systematic literature search was conducted to identify studies examining gamification in higher education. The inclusion criteria were:

1. Empirical research (quantitative, qualitative, or mixed-methods studies).
2. Case studies documenting real-world implementation of gamification in universities.
3. Conceptual frameworks discussing gamification strategies.
4. Studies conducted within Polish universities.
5. Studies published between 2013 and 2023 to capture recent developments.

The following sixteen studies were included:

Cewińska and Krasnova (2014) analysed student perceptions of gamification's effectiveness and limitations.

Frania (2014) explored gamification within broader trends in digital education. Piwowar-Sulej (2021) assessed gamification's implementation across various disciplines in Polish universities.

Kaźmierczak (2023) investigated strategies for engaging foreign language learner during online lessons.

Zielińska-Nowak (2023) conducted a case study on the impact of gamification on student performance.

Głowacki et al. (2018) compared gamification in Polish and Ukrainian higher education institutions.

Zarzycka-Piskorz (2016) analysed the use of Kahoot in grammar instruction as a gamified learning tool.

Kupidura and Sułkowski (2024) evaluated the effectiveness of gamification in adult education.

Zakowicz and Sochacka (2017) looked into how gamification can support student motivation.

Talaczyńska (2023) examined gamification in language learning at Jagiellonian University.

Wawer (2016) investigated student engagement and attitudes toward gamification in academic settings.

Woźniak-Zapór (2018) evaluated GBL in distance learning environments.

Kaźmierczak (2020) studied the use of games during Polish language lessons for foreigners.

Mochocki and Sobociński (2014) discussed the role of Learning Management Systems (LMS) in gamification.

Świętoniowska (2021) investigated how gamification mechanisms influence the motivation of secondary school students to learn and develop entrepreneurial competences.

Sobociński (2013) aimed at clarifying misconceptions about gamification in higher education.

The studies reviewed demonstrate that gamification has a significant impact on student engagement, motivation, and learning outcomes. One of its key benefits is higher engagement and motivation, as gamified learning environments encourage active participation, reduce boredom, and create a more dynamic educational experience (Zielińska-Nowak, 2023; Wawer, 2016; Talaczyńska, 2023; Zakowicz & Sochacka, 2017). Kupidura and Sułkowski (2024) provide additional evidence supporting these findings as they demonstrate that gamification in adult education plays a crucial role in improving student engagement, motivation, and the ability to retain knowledge. Kaźmierczak (2023) shows that gamification not only enhances motivation in online foreign language learning but also transforms lessons into more engaging and culturally immersive experiences by integrating interactive elements; she explains that platforms like Wordwall and Genial.ly provide adaptable tools that seamlessly introduce game-based features, fostering deeper student participation and a more dynamic virtual learning environment.

Additionally, gamification contributes to improved retention of learning by integrating immediate feedback, rewards, and competition, which helps students reinforce and apply knowledge more effectively (Kupidura & Sułkowski, 2024; Woźniak-Zapór, 2018). Research by Cewińska and Krasnova (2014) further supports the claim that students in gamified settings demonstrate better knowledge retention than those in traditional learning environments. Zakowicz and Sochacka (2017) affirm that gamification enhances the learning experience by making it more dynamic through competition, rewards, and structured challenges. Their study reveals that students in gamified environments demonstrate greater persistence in completing educational tasks compared to those in traditional classrooms.

A similar perspective is presented by Kaźmierczak (2020), who explores language acquisition and emphasizes that ludic strategies enhance vocabulary retention, promote interaction, and support students in overcoming language barriers. Mochocki and Sobociński (2014) strengthen this argument by demonstrating the important role that gamification plays in Learning Management Systems (LMS), particularly in boosting student motivation and participation. They point out that the careful application of game mechanics, including points, leaderboards, and achievement tracking, has the potential to increase engagement and improve course completion rates.

Świątoniowska (2021) presents additional empirical evidence demonstrating that gamification has a notable impact on student motivation in entrepreneurship education. The study outlines four primary motivational drivers: (1) engagement driven by a sense of achievement, (2) the influence of competition and social dynamics, (3) a sense of ownership and personal responsibility, and (4) the role of fear of failure as a catalyst for motivation.

Another advantage of gamification is its ability to encourage self-directed learning, as it provides students with the autonomy to choose their challenges, monitor their progress, and tailor their learning strategies according to their needs (Talaczyńska, 2023).

Lastly, real-time and personalized feedback is a distinguishing feature of gamified approaches, allowing students to receive instant performance tracking and adaptive feedback, which facilitates a more tailored and responsive learning experience compared to traditional instructional methods (Piwowar-Sulej, 2021). Sobociński (2013) provides additional support for these findings, asserting that gamification enhances student engagement, autonomy, and motivation in long-term courses. He points out that features like experience points (XP), quest-based learning, and instant feedback are especially effective in keeping students motivated and invested in their progress.

Together, these findings shed light on the potential of gamification to enhance learning effectiveness, provided that it is implemented thoughtfully and in alignment with educational objectives. These advantages are supported by key psychological mechanisms of effective learning, including intrinsic and extrinsic motivation (Ryan & Deci, 2000), dopamine-driven reward systems (Mytnik, 2025), experiential and active learning (Gee, 2007), and the benefits of social interaction and collaborative learning (Zielińska-Nowak, 2023).

Still, the effectiveness of gamification is context-dependent, varying across disciplines, teaching styles, and student demographics (Frana, 2014).

Challenges in Implementing Gamification and GBL

One of the primary challenges associated with the implementation of gamification in Polish higher education is the increased workload and time commitment for instructors. Designing, implementing, and maintaining a gamified course requires substantial preparation, frequent assessments, and continuous feedback, significantly adding to educators' responsibilities (Zielińska-Nowak, 2023).

Additionally, some students perceive gamification as lacking academic rigor, viewing it as "childish" and inappropriate for higher education settings, which can hinder engagement and reduce its perceived legitimacy (Cewińska & Krasnova, 2014). Zakowicz and Sochacka (2017) warn that poorly designed gamification elements can diminish educational value. If rewards and competition overshadow actual learning, gamification may become counterproductive. Sobociński (2013) notes that many instructors remain hesitant to adopt gamification as a teaching method, often viewing it as a trivialisation of academic learning. This resistance is largely driven by a lack of experience with gamified approaches, concerns about maintaining academic credibility, and discomfort with digital technologies.

Another critical challenge is the technical and infrastructure barriers that many universities face. Effective gamification relies on digital platforms, IT support, and faculty training, yet many Polish institutions lack the necessary technological resources and institutional backing for large-scale adoption (Woźniak-Zapór, 2018). Kupidura and Sułkowski (2024) and Kaźmierczak (2020) draw attention to a shared challenge in education: resistance to gamified learning. While Kupidura and Sułkowski (2024) examine the struggles of adult educators in implementing gamification in e-learning—citing concerns over technical complexity and a perceived departure from traditional methods—Kaźmierczak (2020) explores a similar reluctance among language instructors. Both studies emphasize the difficulties of adaptation, whether in integrating gamification into digital platforms or customizing educational games to fit learners' needs. In the same vein, Mochocki and Sobociński (2014) recognise resistance to change as a major obstacle to the implementation of gamification in LMS platforms. They observe that many educators remain reluctant to incorporate game-like elements into their teaching, often due to insufficient training and doubts regarding the effectiveness of such methods.

Furthermore, Kaźmierczak (2020) points to the limited availability of comprehensive teaching aids, adding another layer of complexity to connecting new ideas with tried-and-tested teaching methods. Kaźmierczak (2023) acknowledges that incorporating gamification into online learning poses significant challenges, as many digital tools fail to offer comprehensive gamification features, limiting their effectiveness in fully replicating game-based engagement.

Świątoniowska (2021) observes that although students reacted positively to gamification in entrepreneurship education, their engagement was still shaped by traditional assessment expectations. External factors, such as grades and rankings, at times took precedence over intrinsic motivation, indicating the need for a careful balance between extrinsic rewards and self-driven engagement strategies.

Likewise, the novelty effect of gamification tends to diminish over time, with students initially responding enthusiastically but gradually becoming disengaged as the mechanics lose their appeal (Wawer, 2016).

Lastly, a key concern is pointification, where students focus excessively on accumulating rewards and points rather than engaging in meaningful learning, which can undermine the pedagogical value of gamification (Zielińska-Nowak, 2023).

Comparison with traditional methods

When compared to traditional teaching methods, gamification and GBL offer distinct advantages in engagement, motivation, and learning retention. Studies indicate that students in gamified environments demonstrate higher levels of participation and enthusiasm, as game elements stimulate curiosity and encourage continuous learning (Zielińska-Nowak, 2023; Wawer, 2016). In contrast, traditional learning methods tend to rely on passive knowledge transfer, often resulting in moderate engagement levels (Cewińska & Krasnova, 2014).

Similarly, motivation is significantly enhanced in gamified environments, where progress tracking, rewards, and interactive challenges drive student involvement (Kaźmierczak, 2020; Mochocki & Sobociński, 2014; Piwowar-Sulej, 2021). Traditional learning, on the other hand, is often content-driven and instructor-led, providing students with fewer external motivators (Frana, 2014). Learning retention is also notably higher in gamification and GBL, as interactive methods, competition, and immediate reinforcement aid memory consolidation (Woźniak-Zapór, 2018), whereas passive lecture-based approaches are associated with lower retention rates (Zarzycka-Piskorz, 2016).

Additionally, real-time feedback provided by gamification ensures that students receive immediate insights into their performance, allowing them to adjust their learning strategies accordingly (Talaczyńska, 2023), while traditional education often relies on delayed summative assessments (Wawer, 2016).

Furthermore, gamified and GBL approaches are more student-centered, offering flexibility and adaptive learning paths, whereas traditional education remains largely instructor-driven, with rigid curricula and assessment structures (Piwowar-Sulej, 2021; Zielińska-Nowak, 2023). By the same token, Kupidura and Sułkowski (2024) examine this contrast, noting that, whereas conventional teaching relies on passive instruction, gamified environments introduce interactive and goal-oriented learning structures. Świątoniowska (2021) compares gamified entrepreneurship courses with traditional teaching methods, concluding that game-based approaches lead to higher levels of participation and engagement. The study proposes that incorporating a narrative-driven learning framework, such as the Enterprise Galaxy scenario, further strengthens students' ability to apply entrepreneurial concepts in real-world contexts.

While both methods have their place in higher education, gamification and GBL hold strong potential for modernizing university teaching by making learning more interactive, engaging, and student-focused (Głowacki et al., 2018; Kaźmierczak, 2020).

Best practices



Gamification should enhance learning rather than serve as mere entertainment. Zielińska-Nowak (2023) and Kupidura and Sułkowski (2024) warn against pointification, where rewards, leaderboards, and achievements become an end in themselves rather than reinforcing genuine skill development.



Storytelling and immersive narratives have been shown to improve knowledge retention and critical thinking skills. Kaźmierczak (2023) and Świętoniowska (2021) argue that integrating role-playing, missions, and real-world scenarios into learning experiences makes content more engaging and memorable.



A well-balanced approach to motivation is essential. Wawer (2016) and Zakowicz & Sochacka (2017) emphasise the importance of combining extrinsic motivators, such as progress tracking and feedback, with intrinsic motivators, including mastery-based learning and collaboration, to ensure long-term engagement.



In language learning, digital storytelling, gamified vocabulary acquisition, and adaptive quizzes provide effective ways to reinforce learning (Kaźmierczak, 2020; Zarzycka-Piskorz, 2016).



Learning Management Systems, such as Moodle and Blackboard, should incorporate gamified elements such as progress-tracking dashboards, badges, and interactive quizzes. Mochocki and Sobociński (2014) suggest that these features encourage engagement and provide students with clear indicators of their learning progress.



Gamified LMS platforms should offer instant feedback and adaptive learning paths to personalise instruction and keep students motivated (Głowacki et al., 2018).



In language learning, platforms such as Wordwall, Genial.ly, and Kahoot provide interactive learning opportunities that enhance formative assessment (Kaźmierczak, 2023; Zarzycka-Piskorz, 2016).



Universities must ensure that gamified elements are not just an afterthought but seamlessly woven into existing educational infrastructure, preventing technical setbacks that could disrupt accessibility and student engagement (Woźniak-Zapór, 2018). A well-integrated system allows for smooth implementation, making gamification a natural extension of digital learning rather than an isolated feature.



For gamification to reach its full potential, educators must feel confident in using game-based methodologies. Without adequate training, many instructors remain hesitant to embrace these tools, seeing them as unfamiliar or overly complex. Sobociński (2013) stresses the importance of equipping teachers with the necessary skills, ensuring they can integrate gamification into their courses effectively and meaningfully.

Best practices



Beyond digital rewards, students benefit most from incentives that extend beyond the classroom. Kupidura and Sułkowski (2024) argue that internships, research opportunities, and professional certifications serve as powerful motivators,



Zielińska-Nowak (2023) warns that gamified systems must reinforce genuine learning outcomes rather than simply encouraging students to chase rewards for the sake of accumulating them.



One of the greatest challenges in implementing gamification is gaining instructor buy-in. Many educators remain skeptical, viewing game-based learning as a distraction rather than a legitimate pedagogical tool. Sobociński (2013) argues that targeted faculty training programs are essential in shifting this perspective.



Institutional support also plays a key role. Mochocki and Sobociński (2014) stress that without accessible digital resources, dedicated training, and technical assistance, educators may struggle to incorporate gamification effectively.



Finally, Piwowar-Sulej (2021) stresses the importance of tracking participation trends, identifying drop-of points, and making informed adjustments to make sure that gamification continues to serve as an effective tool for student motivation and achievement.

Best practices

Summary and Identified Research Gap

While gamification and game-based learning (GBL) demonstrate clear benefits in Polish higher education—such as enhanced engagement, motivation, and learning retention—there is a lack of long-term empirical studies assessing their sustained effectiveness. Most research focuses on short-term student responses, but little is known about how gamification impacts long-term knowledge retention, skill development, and academic performance. Additionally, while gamification is widely applied in language learning and STEM education, there is limited research on its effectiveness in disciplines such as social sciences and humanities. Furthermore, institutional barriers—including faculty training needs and technological limitations—are often mentioned but not deeply analysed, making it unclear how universities can effectively scale and sustain gamified learning approaches.

Future Roadmap

1

The establishment of a structured framework for GBL and GT integration is a must.

2

Faculty training and professional development should be a part (?) of the course

3

Systematic Implementation of GBL and GT Across Disciplines

4

Integration of Learning Analytics and Assessment Strategies

5

Policy and Institutional Support for GBL and GT

6

Pilot Programs and Evaluation Strategies

Comparison and guidelines

Based on the comparative analysis of GBL, Gamification Techniques (GT), and Educational Digital Games (EDG) in Slovakia, Poland, and Finland, as well as findings from empirical research, the following suggestions outline key elements for developing a university-level syllabus that integrates game-based and gamified learning strategies effectively.

1

A structured approach is necessary to ensure that game-based learning is effectively aligned with pedagogical goals rather than being used in a fragmented or superficial way. While creating the syllabus we must:

- **Define Core Learning Objectives:** Ensure that GBL and GT elements align with educational outcomes rather than serving as standalone activities. Learning goals should integrate cognitive, social, and emotional development (Alotaibi, 2024; Sailer & Homner, 2019).
- **Select Appropriate Game Types:** Research suggests that puzzle and strategy games enhance cognitive learning, role-playing games boost engagement and problem-solving, and simulation-based games improve applied learning outcomes (Gui et al., 2023; Lu et al., 2022).
- **Establish Pedagogical Guidelines for Implementation:** Courses should adopt evidence-based methodologies, including scaffolding, feedback mechanisms, and structured debriefing sessions to enhance learning retention (Cai et al., 2022).
- **Create a Balanced Gamification System:** Use points, leaderboards, and rewards strategically (which seems to be a keyword to all our activities), ensuring that they complement learning rather than becoming distractions (Chen et al., 2020).

2

A major challenge identified in the Slovak, Polish, contexts is the lack of faculty training in GBL and GT methodologies. To address this, the syllabus should incorporate:

- **Mandatory Instructor Training Modules:** Faculty members should complete training programs on game-based pedagogy, digital tools, and adaptive learning strategies before teaching GBL-integrated courses (Hayak & Avidov-Ungar, 2020).
- **Practical Workshops and Peer Collaboration:** Instructors should engage in case-based learning, where they experiment with designing and evaluating game-based course content (Marklund & Taylor, 2016).
- **Integration of GBL into Pedagogical Research:** Faculty should be encouraged to conduct action research on GBL effectiveness, student engagement, and learning outcomes (Mao et al., 2021).

Most universities currently integrate GBL on a limited basis, either as isolated courses (e.g., game design programs in Finland) or as small-scale initiatives within existing curricula. A structured syllabus should include:

- **Interdisciplinary Course Applications:** Ensure that GBL elements are applied across different academic fields, including STEM, social sciences, and humanities (Lei et al., 2022; Dixon et al., 2022) – but it is not feasible at the first and second stage – maybe the sustainability stage may address that?
- **Adaptable Syllabus Templates:** Develop a modular syllabus structure that can be customized for different disciplines, ensuring that game-based learning is scalable and adaptable (Van Gaalen et al., 2020) – for the sake of interdisciplinarity.
- **Research-Backed Game Selection Criteria:** Provide guidelines for choosing games based on research findings, ensuring that they are aligned with cognitive learning goals and student engagement strategies (also their preferences?) (Tokac et al., 2019).

One of the challenges in GBL implementation is the lack of standardized assessment methods to measure learning outcomes effectively. A GBL-based syllabus should:

- **Use Learning Analytics to Track Progress:** Implement real-time student performance tracking, ensuring that feedback mechanisms provide actionable insights for instructors (Greipl et al., 2020).
- **Combine Formative and Summative Assessments:** Include stealth assessments, digital analytics, and reflective learning journals alongside traditional exams to measure both engagement and learning retention (Tsai & Tsai, 2020).
- **Assess Both Individual and Collaborative Learning Gains:** Ensure that evaluations include both individual progress and teamwork performance, particularly in collaborative game environments (Chen et al., 2020).

A key finding from the comparative analysis is the lack of institutional policies supporting GBL adoption in Slovakia, Poland, and Finland. To address this gap, the syllabus should:

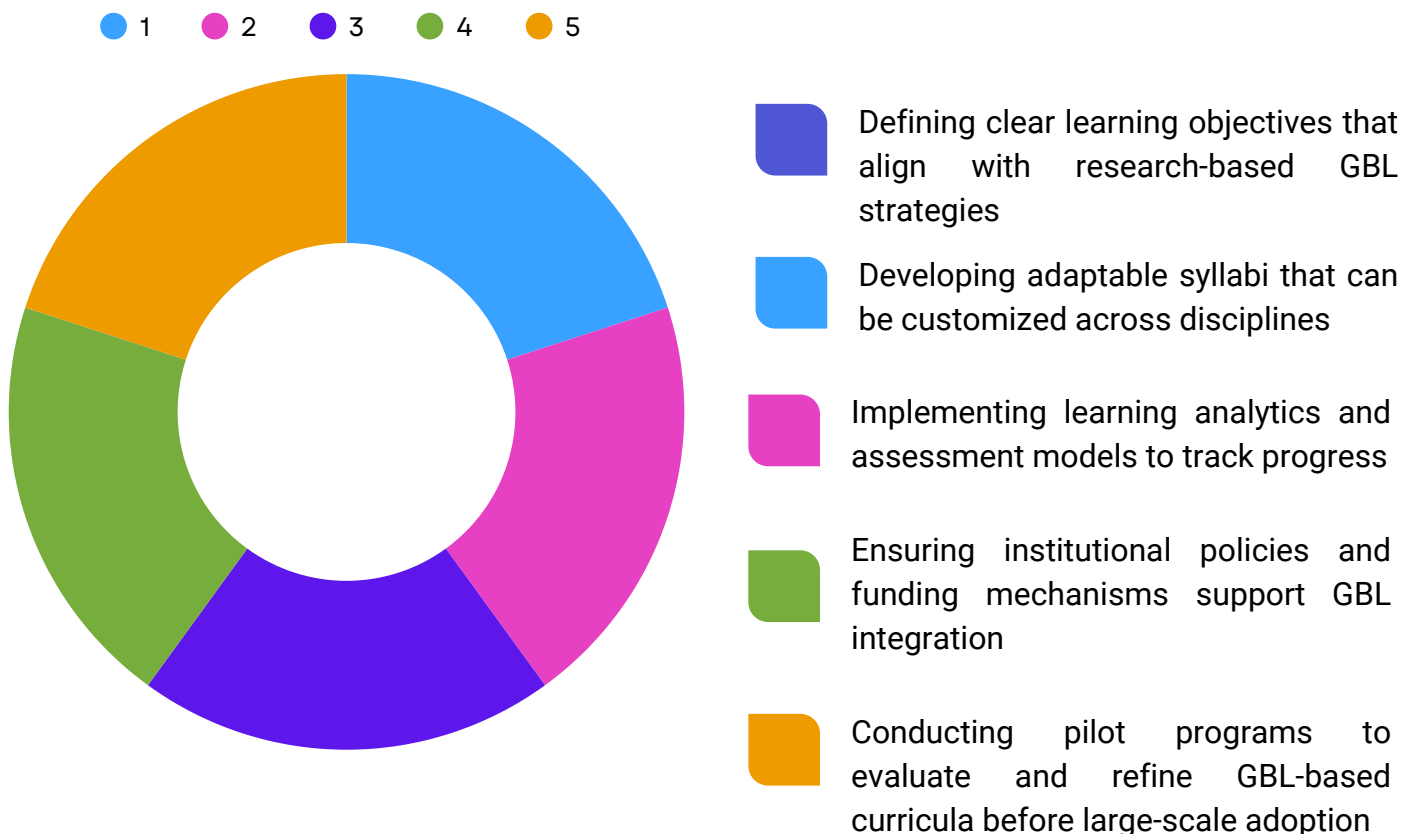
- **Incorporate National and Institutional Digital Education Strategies:** Align GBL integration with existing national strategies on digital literacy, AI in education, and competency-based learning (Fernando & Premadasa, 2024). Although these are to a large extent not explicitly linked to GBL and GT, they do create space for teachers' flexibility and adaptation of appropriate methods.
- **Encourage University-Wide Collaboration:** Promote institutional partnerships that support cross-disciplinary GBL implementation, ensuring that game-based learning is integrated at a systemic level rather than through isolated courses (Sirotová et al., 2021), which we plan to address in the Student Colloquia.

Since many GBL initiatives in higher education remain experimental, an effective syllabus should include:

- **Pilot Testing Before Full-Scale Implementation:** Conduct small-scale trials in selected courses, using qualitative and quantitative data to refine methodologies before expanding (Zielińska-Nowak, 2023) – our plan is aligned with the findings here.
- **Student and Instructor Feedback Mechanisms:** Incorporate structured feedback loops, allowing students and instructors to reflect on the effectiveness of game-based methodologies (Zarzycka-Piskorz, 2016).
- **Benchmarking Against International Best Practices:** Compare implementation strategies with successful international models to refine best practices and adapt them to the local educational context (Wawer, 2016).

CONCLUSION

Developing a university-level GBL and EDG syllabus requires a structured, research-backed approach that integrates pedagogical frameworks, faculty training, interdisciplinary applications, assessment strategies, and institutional policy support.



REFERENCES

- Alotaibi, M. S. (2024). Game-based learning in early childhood education: A systematic review and meta-analysis. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2024.1307881>
- All, A., Castellar, E. P. N., & Van Looy, J. (2016). Assessing the effectiveness of digital game-based learning: Best practices. *Computers & Education*, 92–93, 90–103. <https://doi.org/10.1016/j.compedu.2015.10.007>
- Cai, Z., Mao, P., Wang, D., He, J., Chen, X., & Fan, X. (2022). Effects of scaffolding in digital game-based learning on student achievement: A three-level meta-analysis. *Educational Psychology Review*, 34, 223–257.
- Cewińska, J., & Krasnova, A. (2014). Grywalizacja w rozwoju i edukacji – szanse i zagrożenia. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 350. <https://doi.org/10.15611/pn.2014.350.06>
- Chen, C.-H., Shih, C.-C., & Law, V. (2020). The effects of competition in digital game-based learning: A meta-analysis. *Educational Technology Research & Development*, 68(3), 1175–1200.
- Chen, Y. et al., "A Systematic Review of Perceptions Regarding Educational Video Games Held by Students, Administrators, Teachers, and Parents," 2023 IEEE Frontiers in Education Conference (FIE), College Station, TX, USA, 2023, pp. 1-10, doi:10.1109/FIE58773.2023.10343075.
- Chiotaki, D., Pouloupoulos, V., & Karpouzis, K. (2023). Adaptive game-based learning in education: A systematic review. *Frontiers in Computer Science*, 5, 1062350. <https://doi.org/10.3389/fcomp.2023.1062350>
- Christopoulos, A., & Mystakidis, S. (2023). Gamification in education. *Encyclopedia*, 3(4), 1223–1243.
- Dixon, D. H., Dixon, T., & Jordan, E. (2022). Second language (L2) gains through digital game-based language learning: A meta-analysis. *Language Learning & Technology*.
- Fernando, P. A., & Premadasa, H. K. S. (2024). Use of gamification and game-based learning in educating Generation Alpha: A systematic literature review. *Educational Technology & Society*, 27(2), 114–132.
- Frana, M. (2014). New educational trends connected with the development of media and innovative technologies – A few reflections on the future perspectives on learning and teaching. *Journal of Educational and Social Research*, 4(4), 232–236. <https://doi.org/10.5901/jesr.2014.v4n4p232>
- Gee, J. P. (2007). What video games have to teach us about learning and literacy. Palgrave Macmillan.
- Głowacki, J., Kriukova, Y., & Avshenyuk, N. (2018). Gamification in higher education: Experience of Poland and Ukraine. *Advanced Education*, 10, 105–111.
- Greipl, S., Moeller, K., & Ninaus, M. (2020). Potentials and limits of game-based learning. *International Journal of Technology Enhanced Learning*, 12(1), 1–19. <https://doi.org/10.1504/IJTEL.2020.110047>
- Gui, Y., Cai, Z., Yang, Y., Kong, L., Fan, X., & Tai, R. H. (2023). Effectiveness of digital educational games and game design in STEM learning: A meta-analytic review. *International Journal of STEM Education*, 10, Article 4. <https://doi.org/10.1186/s40594-023-00424-9>
- Hayak, M., & Avidov-Ungar, O. (2020). Teacher perception of the adoption and implementation of digital game-based learning (DGBL) in their classroom teaching. *Tech Trends*, 64(2), 309–318.
- Kaźmierczak, P. (2020). Gry w glottodydaktyce polonistycznej: Perspektywa teoretyczna oraz wnioski praktyczne. *Homo Ludens*, 13(4).
- Kaźmierczak, P. (2023). Gamifikacja, grywalizacja czy gryfikacja – aktywizacja uczniów podczas zajęć zdalnych. *Acta Universitatis Lodzensis. Kształcenie Polonistyczne Cudzoziemców*, 30, 1–XX.
- Kupidura, T., & Sułkowski, T. (2024). Grywalizacja w edukacji dorosłych: Narzędzia i skuteczność w procesie nauczania. *Edukacja Ustawiczna Dorosłych*, 3(2024). <https://doi.org/10.34866/2jhj-6b89>
- Lei, H., Chiu, M. M., Wang, D., Wang, C., & Xie, T. (2022). Effects of game-based learning on students' achievement in science: A meta-analysis. *Journal of Educational Computing Research*, 60(2), 205–229.
- Lu, Z., Chiu, M. M., Cui, Y., Mao, W., & Lei, H. (2022). Effects of game-based learning on students' computational thinking: A meta-analysis. *Journal of Educational Computing Research*, 60(3), 545–576. <https://doi.org/10.1177/07356331221100740>
- Luo, Z. (2022). Gamification for educational purposes: What are the factors contributing to varied effectiveness? *Education and Information Technologies*, 27, 891–915. <https://doi.org/10.1007/s10639-021-10642-9>
- Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2021). Effects of game-based learning on students' critical thinking: A meta-analysis. *Journal of Educational Computing Research*, 59(3), 493–517. <https://doi.org/10.1177/07356331211007098>
- Marklund, B. B., & Taylor, A. S. A. (2016). Educational games in practice: The challenges involved in conducting a game-based curriculum. *The Electronic Journal of e-Learning*, 14(2), 122–135.
- Ministerstwo Cyfryzacji. (2020). Polityka dla rozwoju sztucznej inteligencji w Polsce od roku 2020. <https://www.gov.pl/web/ai/polityka-dla-rozwoju-sztucznej-inteligencji-w-polsce-od-roku-2020>
- Ministerstwo Edukacji i Nauki. (2023). Zintegrowana Strategia Umiejętności 2030 – część szczegółowa. <https://www.gov.pl/web/edukacja/zintegrowana-strategia-umiejtnosci-2030-czesc-szczegolowa--dokument-przyjety-przez--rade-ministrow>
- Ministerstwo Finansów, Funduszy i Polityki Regionalnej. (2021). Fundusze Europejskie na Rozwój Cyfrowy 2021–2027 (FERC). <https://www.polskacyfrowa.gov.pl/strony/o-programie/fundusze-europejskie-na-rozwoj-cyfrowy-2021-2027-2028>
- Ministerstwo Infrastruktury i Rozwoju. (2014). Program Operacyjny Polska Cyfrowa 2014–2020. <https://www.polskacyfrowa.gov.pl/strony/o-programie/dokumenty/program-polska-cyfrowa-2014-2020>

REFERENCES

- Mochocki, M., & Sobociński, M. (2014). LMS dla edukacyjnej gamifikacji akademickiej: potrzeby i pomysły. In M. Dąbrowski & M. Zając (Eds.), *E-edukacja w praktyce – wyzwania i bariery* (pp. 172–186). Fundacja Promocji i Akredytacji Kierunków Ekonomicznych.
- Mytnik, J. (2025). Gamifikacja w edukacji: O budowaniu fabularnych systemów motywacyjnych. Wydawnictwo Fundacji Zmieniam.
- NASK. (2017). Ogólnopolska Sieć Edukacyjna (OSE). <https://ose.gov.pl>
- Piecuch, T., et al. (2023). Gamification In Management Education. *Humanities and Social Sciences*, 30 (4), 271-288. <https://czasopisma.prz.edu.pl/hss/article/view/1649/1234>
- Piowar-Sulej, K. (2021). The use of gamification in academic teaching – Evidence from Polish state universities. *Przegląd Badań Edukacyjnych / Educational Studies Review*, 32(1), 75–98. <https://doi.org/10.12775/PBE.2021.005>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Sailer, M., & Homner, L. (2019). The gamification of learning: A meta-analysis. *Educational Psychology Review*, 31, 77–112. <https://doi.org/10.1007/s10648-019-09498-w>
- Sejm Rzeczypospolitej Polskiej. (2016). Ustawa z dnia 14 grudnia 2016 r. – Prawo oświatowe. Dz.U. 2017 poz. 59. https://natlex.ilo.org/dyn/natlex2/r/natlex/fe/details?p3_isn=105967
- Sirotová, M., Michvová, V., & Hostovecký, M. (2021). Serious games in university education of future teachers. Monograph. <https://doi.org/10.3726/b18088>
- Sobociński, M. (2013, July 5–7). Grywalizacja w praktyce: reguły, problemy, zalety i technologia. Wstępna analiza rocznych kursów przeprowadzonych na UKW. Paper presented at Informatyka w Edukacji, Toruń, Poland.
- Świętoniowska, J. (2021). Entrepreneurial gamer – how do gamification mechanisms drive learning motivation of secondary school students? Wydawnictwo Uniwersytetu Komisji Edukacji Narodowej w Krakowie. <https://doi.org/10.24917/20833296.171.5>
- Talaczyńska, M. (2023). Grywalizacja, czyli jak wkręcić studentów w intensywną naukę: W poszukiwaniu skutecznej metody. *Zeszyty Glottodydaktyczne*, 2023(15), 152–155. <https://doi.org/10.4467/27204812ZG.23.015.18716>
- Tokac, U., Novak, E. P., & Thompson, C. G. (2019). Effects of game-based learning on students' mathematics achievement: A meta-analysis. *Journal of Computer-Assisted Learning*, 35(1), 10–19. <https://doi.org/10.1111/jcal.12347>
- Tsai, Y.-L., & Tsai, C.-C. (2020). A meta-analysis of research on digital game-based science learning. *Journal of Computer-Assisted Learning*, 36(3), 299–319. <https://doi.org/10.1111/jcal.12430>
- University of Szczecin. (n.d.). FGPE Plus – Fun and Gamified Programming Education. <https://fgpeplus.usz.edu.pl>
- Van Gaalen, A. E. J., Brouwer, J., Schönrock-Adema, J., Bouwkamp-Timmer, T., Jaarsma, A. D. C., & Georgiadis, J. R. (2020). Gamification of health professions education: A systematic review. *Advances in Health Sciences Education*, 25, 885–919. <https://doi.org/10.1007/s10459-020-10000-3>
- Van Gaalen, A. E. J., Schönrock-Adema, J., Renken, R. J., Jaarsma, A. D. C., & Georgiadis, J. R. (2022). Identifying player types to tailor game-based learning design to learners: Cross-sectional survey using Q methodology. *JMIR Serious Games*, 10(2), e30464. <https://doi.org/10.2196/30464>
- Vandercruysse, S., Vandewaetere, M., & Clarebout, G. (2012). Game-based learning: A review on the effectiveness of educational games. In *Handbook of research on serious games as educational, business and research tools* (pp. 628–647).
- Wawer, M. (2016). Grywalizacja w edukacji akademickiej – możliwości i ograniczenia jej wykorzystania w kształceniu studentów. *Edukacja – Technika – Informatyka*, 2(16), Wydawnictwo UR. <https://doi.org/10.15584/eti.2016.2.26>
- Woźniak-Zapór, M. (2018). Mechanizmy gamifikacji w kształceniu na odległość w praktyce szkolnictwa wyższego: Implementacja i próba oceny na przykładzie KAAFM. Oficyna Wydawnicza AFM.
- Zakowicz, I., & Sochacka, J. (2017). Grywalizacja – sposób wspomagania motywacji studentów do osiągania sukcesów edukacyjnych? In M. Humeniuk, I. Paszenda, & W. Żłobicki (Eds.), *Sukces jako zjawisko edukacyjne* (Vol. 1, pp. 165–178). Instytut Pedagogiki Uniwersytetu Wrocławskiego. <https://doi.org/10.34616/22.19.156>
- Zarzycka-Piskorz, E. (2016). Kahoot it or not? Can games be motivating in learning grammar? *Teaching English with Technology*, 16(3), 17–36. <http://www.tewtjournal.org>
- Zielińska-Nowak, K. (2023). Gamifikacja kursu na uczelni wyższej – Studium przypadku. *Homo Ludens*, 1(16), 199–212. <https://doi.org/10.14746/HL.2023.16.10>
- Zhang, Z., & Crawford, J. (2024). EFL learners' motivation in a gamified formative assessment: The case of Quizizz. *Education and Information Technologies*, 29, 6217–6239. <https://doi.org/10.1007/s10639-023-12034-7>

BASELINE ANALYSIS REPORT

you can find US here:

[Instagram](#)

[Facebook](#)

[LinkedIn](#)

[Discord](#)



LEARN TO PLAY PROJECT

2024-1-SK01-KA220-HED-000252451 LEARN TO PLAY FOR
THE FUTURE



Co-funded by
the European Union