



Iwona Mokwa-Tarnowska

Gdansk University of Technology

 <https://orcid.org/0000-0001-5776-0404>


Viviana Tarnowska

University of Sussex

 <https://orcid.org/0000-0002-7861-7639>

Magdalena Roszak

Poznan University of Medical Sciences

 <https://orcid.org/0000-0001-6495-6771>

The Appeal of Gamification for Master's Students of Science and Technology

Abstract

Universities can offer their master's students who want to improve their language skills different learning environments. They can range from traditional classes to online programmes equivalent to an on-campus experience or reaching beyond it. Learning technical English through a curriculum that is inspiring and stimulating due to authentic materials used in a gamified setting can result in positive learning outcomes and increased satisfaction levels among lecturers and students. The former can find new challenges helping prevent burnout, the latter have the chance to develop hard and soft skills, including analytical, reflective and critical thinking, through context-specific language. Interactions structured around online activities which involve searching for information in authentic resources and completing activities that allow for progress to the next level can effectively prepare students for challenges they will encounter in their professional life. They can also capture imagination and unlock the creative potential of the educators involved in their development and of participants bored with school routine and textbooks. Thus, a gamified language course for specific purposes can become a highly motivating environment, in which young people develop their creativity, language proficiency

and knowledge of technological advances not only in the fields of their interest; they are also exposed to new learning practices due to the application of game-design elements. The ideas presented above will be supported by students' opinions and attitudes expressed during a pilot Moodle course in a gamified format conducted at Gdansk University of Technology in the summer semester of 2021/2022.

K e y w o r d s: gamification, ESP, technical English, cognitivism, soft skills

Introduction

Designing an e-learning English course for master's students of science and technology who possess advanced language skills poses numerous challenges. First of all, developers must analyse the ways adults acquire knowledge, understand their preferences, and examine their learning styles to create course content which promotes and facilitates self-directed learning. Then, they should choose tools, and design engaging resources and activities that enable improvement in areas of need related to students' specialisation, and contextualised language. Finally, they need appropriate strategies evaluating progress and learning outcomes.

The delivery of online classes in academic institutions after the COVID-19 pandemic often raises the question of the quality of the education process. Even if the level of discomfort associated with new technologies, innovative teaching methods and active learning strategies may be decreasing as both academics and students have gained substantial experience over the last years, some scepticism remains. The amount of time involved with development and delivery can be an issue. A lack of interaction with the lecturer in person and insufficient engagement in an online class can also be part of the problem. Moreover, achieving learning outcomes to the required standard is viewed by some as difficult. Regardless of doubts and concerns, e-learning is here to stay. Technology can enhance learning experience if used to create a student-centred classroom, promoted by constructivist thought, which can yield a deeper level of knowledge development.

The paper aims to show how a gamified Moodle environment can help educators to engage master's students of science and technology in learning to improve language skills and soft competencies. The challenges of instructional design and course delivery will be presented through the analysis of a pilot course that was offered by the Language Centre at Gdansk University of Technology (GUT) in the summer semester of the academic year 2021/2022. The ideas shared in the paper will be supported by qualitative and quantitative research findings.

Games and Gamification in Education

The difficulty to understand a category like *game* is acknowledged to have been noticed by Wittgenstein (1953: 36), who noticed that there is no collection of properties that all games share, instead they are in the same category via resemblances they bear to one another. The concept of *family resemblances* of games was further investigated by various cognitive linguists (Lakoff, 1987:16, 18, 21, 42, 62, 65; Kalisz & Kubiński, 1996; Kövecses, 2005). The members of this category resemble one another in various ways, but some do not share any relevant attributes. Some require, for example, competition and skills whereas others involve amusement or luck or both; some are played on boards or on paper or on a computer screen, whereas others require specialised equipment; some entail role-playing, others strategic thinking. According to cognitive linguists, they form a natural category of senses that includes more and less prototypical elements, with the latter bearing no resemblance to the former if they are not directly linked family members.

Research has shown that games may have a substantial impact on education (Squire & Jenkins, 2003). Their potential can be used in different educational settings, ranging from a traditional classroom to an online synchronous or asynchronous one (Cardinot & Fairfield, 2022; Hainey et al., 2013; Miller, 2008; Squire, 2003). They can benefit both less and more advanced students learning online (Gros, 2007). The application of digital games in university teaching seems to be more confined to courses in technology and engineering, as there is often preference for simulation, drill and practice in this educational setting (Udeozor, 2022; Pan, Ke, & Xu, 2022). As far as language classes are concerned, there is an increasing interest in online games which raise learner awareness of the second language, especially if they provide a highly engaging context through competition and relaxed atmosphere (Peterson et al., 2022).

Empirical evidence suggests that the use of game design elements in non-game context, i.e. gamification, results in increased student engagement, higher motivation due to e.g. a system of rewards (Rincon-Flores, & Santos-Guevara, 2021; Connolly et al., 2012), and better learning outcomes visible in a rise in the passing rate (Chans & Portuguese Castro, 2021). However, the nature of benefits derived from gamification requires further research to find more rigorous evidence of the effectiveness of such instructional design as only small longitudinal studies have been conducted and they show mixed results (Saxena & Mishra, 2021; Dehghanzadeh et al., 2021; Kalogiannakis, Papadakis, & Zourmpakis, 2021).

Taking into consideration the concept of a natural category as delineated by cognitive linguists, the members of the game family, having no necessary and sufficient features, can have a different effect on instructional design. This leads to courses utilising a variety of features resulting from a variety of games and their

attributes, which makes research on using game elements in a non-game context even more difficult and affects the analysis of evidence.

Authentic Material in a Constructivist Classroom

Although active learning predominantly involves co-operative and collaborative activities (Donelan, Kear & Ramage, 2010), it can also be triggered by a gamified educational setting with no interaction among participants. Firstly, depending on games it draws on, gamification can entail problem-solving tasks and decision-making strategies – both are thought to make students actively engaged in learning. Secondly, student-friendly design, accommodating different learning styles, can be addressed by varied resources and activities as well as non-linear paths, allowing for greater autonomy and freedom of choice for students who decide what they want to study to maximise their achievements. Thirdly, the nature of educational content, its quality, authenticity, relevance to contemporary and future challenges, is what helps to self-direct learning and keep engaged throughout the whole online course.

A constructivist classroom (Mokwa-Tarnowska, 2017: 18–29), which is action oriented (Reinfried, 2000), is a very good environment in which students of science and technology who are upper-intermediate or advanced users of English can learn specialist vocabulary, improve their grammar skills, and increase the knowledge of the subject matter (Mokwa-Tarnowska, 2017: 18–29). If they use authentic materials, they can learn a variety of skills ranging from meaningful reading to using new concepts in context (Kołodziejczak, Mokwa-Tarnowska & Roszak, 2017). Written discourse shows how to produce correct sentences; it instructs how to develop a paragraph using coherence and cohesion; and it also exemplifies how to create a text within a genre. Not only is writing itself of educational value. Pictures, videos and online animations provide visual stimuli, which help students understand the linked material and acquire new knowledge. Authentic resources can allow them to build their own conceptual systems similar to those of native speakers.

Constructivism stresses learner individualisation and autonomy, hence it is learner-centred. Students in a gamified constructivist course are usually allowed to choose the educational paths they want to follow. Not always do all learning activities in an educational programme satisfy the needs of every learner, so exercising certain freedom of choice stimulates engagement. Those students whose language competence is more advanced should be advised to build up their knowledge and skills on different resources and tasks than those meant for the less knowledgeable. Rarely is a group of students totally homogeneous, especially when participants of an ESP course are taken into consideration. That is why, tailoring the course content is important, and it can be obtained through gamification.

Another significant constructivist principle is process-related awareness. Students become more conscious of the educational processes itself, which results in them acquiring skills necessary in lifelong learning. They better understand the nature of the English language, with its patterns, image schemata and conceptual metaphors. They develop intercultural awareness, which helps them understand and adopt the conceptual systems native speakers have created over a long time.

Whether or not students can produce linguistically correct specialist texts, written within genre constraints and describing the phenomena about which they learnt during their online classes, can be checked in follow-up activities assigned for the traditional part of a blended course. In an e-learning setting, they can be offered contextualised self-assessment questions such as multiple-choice, matching and gap filling, but in a face-to-face one, they can be encouraged to participate in problem-solving activities involving analytical and critical thinking as well as production tasks requiring writing a passage or a whole text on one of the topics covered. Their inclusion makes students more interested in the resources.

Second degree students often find learning programmes structured around general English coursebooks boring and repetitive – a mere revision of what they did in previous schools, devoid of new or innovative elements they could benefit from. A gamified course with authentic resources and activities based on them provides a variety of opportunities to build mental models, thus it can better satisfy the needs of more experienced learners.

The constructivist approach to teaching and learning English in a natural environment can be more motivating for adult students. Working with authentic texts under the supervision and guidance of the tutor, participating in collaborative projects, developing new knowledge through discussions, course participants will be more adequately prepared for writing technical texts and participating in professional communication. Assessment based on problem-solving tasks in the form of open-ended questions is more beneficiary both for students and tutors, as it shows how well learners can create new knowledge in their written works and spoken discourse.

GUT's Students' Gamified Experience

In the summer semester of the academic year 2021/2022, the Language Centre at Gdansk University of Technology (GUT) offered a test version of a gamified course in professional English to its 2nd degree students. As many as 117 volunteers agreed to test it. They had either already started a traditional two-semester course in the previous semester or had to start a half-year course in February. Some of them were returning students who had initiated re-entry to the university, and

English was the only compulsory subject they had to complete to be allowed to submit their master's thesis. Therefore, studying online was an interesting option, especially for those who were also in employment of some kind. The volunteers came from different faculties: Faculty of Architecture (4 students), Faculty of Civil and Environmental Engineering (10), Faculty of Electrical and Control Engineering (44), Faculty of Electronics, Telecommunications and Informatics (42), Faculty of Mechanical Engineering and Ship Technology (15), Faculty of Applied Physics and Mathematics (1), Faculty of Chemistry (1). The difference in the number of participants from each GUT's faculty reflects differences in faculty enrolment numbers to some extent, especially in the case of the Faculty of Chemistry (one of the smallest faculties as far as enrolment is concerned) and the Faculty of Electronics, Telecommunications and Informatics (the biggest enrolment of students at GUT).

Moodle has not been designed to be used as software for gamification. However, it is flexible enough to allow for some elements typical of board games to be used in the instructional design of a course in English for specific purposes (ESP). Moreover, being the main GUT's learning management system (LMS), it is well protected against data security breaches. Finally, it is easy to use for our students and lecturers as it has supported the educational process at GUT for many years – particularly intensively since the outbreak of the COVID-19 pandemic (Mokwa-Tarnowska & Tarnowska, 2022).

The course called *My Interstellar Colony Mission* (MyICM) is divided into 14 stages within 5 levels, corresponding to 14 week-workload mirroring a traditional course, and each stage has three thematically related paths, two for self-paced study plus a third one which focuses on additional activities including some for face-to-face meetings (Figure 1). To proceed to the next stage, the participants are required to achieve a score of at least 60% in one of two *Test Yourself* quizzes. They can also attempt two additional quizzes *Challenge Yourself* to accumulate more points for course activities. The horizontal movements – within a stage – and the vertical ones – from stage to stage – resemble tracks on a board game, as does moving up a career ladder, from being an applicant to becoming the governor of the colony. The colour scheme of each stage varies according to the employee's seniority in employment – the higher the position is, the darker it becomes (Figure 2). Like in many games, the participants collect trophies, i.e. badges, which look like medals and cups. The storyline with all the instructions is consistent with the narrative of building a colony on a far-away planet. The resources and activities as well as the language of the instructions aim to teach contextualised professional and formal English. The quizzes are meant to encourage the participants to read and watch the educational material, testing their developed knowledge is of secondary importance. The students can improve their total score by participating in additional activities that require analytical and critical thinking, and written discourse. To make the game more visually appealing, the default icons were hidden for the participants, and clickable pictures directed them to another subpage.

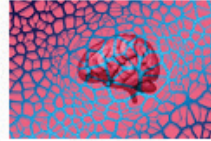
Stage 3: Communication Types and Systems



Verbal Communication



Communication Technology



Networks



Level 4 Stage 1



Not available unless any of:

- You achieve a required score in 3.3a Test Yourself
- You achieve a required score in 3.3b Test Yourself



Experts



Welcome to Level 4



Stage 1: Transportation



Cars



Planes



Spaceships

Figure 1. Horizontal and vertical paths in MyICM

Stage 3: Entertainment



✓ Level 6 - End of Game 🏆 🔒

- 🔒 Not available unless:
- You achieve a required score in 5.3a Test Yourself
 - The activity 5.3c is marked complete



I'm glad to have been of service, Governor!



Figure 2. End of the game showing the highest position in the organizational hierarchy

Research Aims, Questions and Methods

The qualitative and quantitative research presented in this paper aimed to investigate the nature of the learning experience the participants had during the e-learning gamified language course *MyICM* – mainly the level of student satisfaction with the adopted learning approach, the level of their engagement, and the impact of the environment on an increase in students' active knowledge of

professional English. The students' opinions and needs enumerated in the comment sections of the questionnaire and sent directly to me have helped to improve the educational setting, which will be offered as an optional programme to master's students. Two basic tools were used to produce a qualitative analysis: a text-based online interview and a questionnaire (Cohen, Manion & Morrison, 2018: 538–539). The quantitative research involved an online survey. The research questions were as follows:

- What are students' attitudes towards a gamified Moodle course?
- How effective can online learning in a gamified environment be from the students' point of view?
- How engaging is a course structured around materials that address topics from many different disciplines for master's students specialising in one discipline?
- To what extent does an atypical e-learning ESP course satisfy the expectations of master's students of engineering and technology?

Data were collected through an online questionnaire available on the Moodle course's website at the end of the game and email communication. The questionnaire included eight questions with answers on a five-point Likert-type scale, and all of them finished with a request to provide a comment and justify the chosen answer. The questionnaire was not authorised to collect sociodemographic information. It is considered reliable and valid – it included standardized questions that are frequently asked to evaluate online education and language courses; it produced generalizable results, which was seen across the whole sample. All the participants were given the same questions and were tested under the same conditions. The activity was available only for those who had reached the end of the gamified course content.

Quantitative data are presented as absolute numbers and/or percentages, as appropriate. Ordinal data are expressed also as median, interquartile range and minimum and maximum values, and are represented in a box plot. The comparisons of more than two groups were performed using the Kruskal-Wallis test. Statistical analyses were performed with STATISTICA 13.0 (StatSoft Inc.).

The qualitative data were analysed via inductive coding, which helped to conceptualise the attitudes of the participants towards the gamified course and their understanding of their needs and preferences, as well as assess the suitability of the educational environment to provide quality learning. This approach resulted in defying possibly erroneous preconceptions imposed by deductive data analysis, and allowed dominant and significant themes inherent in raw data to emerge. It also aimed to establish clear, transparent and justifiable links between the aims of the study and the findings. Initial categories were created from actual words and phrases used in specific answers. Categories with similar meanings were later combined under a superordinate category. Thus, codes were developed inductively from the data downloaded from Moodle and comments sent via email (Saldaña, 2021).

Research Design and Implementation

As many as 92 students completed the survey – the response rate was 78.6% (the total number of testers was 117). It can be assumed that the composition of the study group was homogeneous with respect to many factors: age, intellectual capacity, interest in science, technology and engineering, and B2–C1 level of English according to the Common European Framework of Reference for Languages as well as experience in using Moodle.

The analysis of the answers to selected questions is presented in this study. It is supported by findings collected in text-based online interviews with the participants. The responses were not analysed according to language competence because this research phase did not target the assessment of an increase in specific language skills. All the participants took a placement test but there was no end-of-course exam. The final score reported by Moodle was not English competence level dependent. Some of the participants whose initial level was in the lower area of the B2-C1 continuum, achieved a total score above 80%, which was also typical of the higher level students. The quizzes focused primarily on contextualised language from the resources and to a lesser extent on the general knowledge of grammar and lexis.

Qualitative and Quantitative Research – Results and Discussion

The students appreciated the format of the course – grade 5 from 24.09% of the respondents and grade 4 from 50% (Figure 3). None of them had participated in a similar online programme on Moodle before. They had used numerous online materials and done many activities developed in the LMS since the outbreak of the pandemic prior to joining the course. However, all of them had had a considerably simpler structure and a linear arrangement; they had been built using the topics format and typical Moodle icons. Some students mentioned in the survey that they were surprised to see clickable pictures and an atypical layout compared with other university Moodle courses.

The students were also satisfied with the game elements that had been incorporated into the instructional design and the whole outcome (Figure 4). To show slight differences across the members of the biggest cohorts, answers given by 85 respondents from the Faculty of Electrical and Control Engineering (FECE), the Faculty of Civil and Environmental Engineering (FCEE), the Faculty of Mechanical Engineering and Ship Technology (FMEST) and the Faculty of Electronics, Telecommunications and Informatics (FETI) are presented in Figure 4.

The substantial majority (77 students out of 92, and 70 out of 85) showed a positive attitude towards the gamified course they had attended (altogether: very satisfied – 24%, satisfied – 59%, undecided – 11%, dissatisfied – 2.2%, very dissatisfied – 2.3%). Seven students from three other faculties, whose answers are not included in the data in Figure 4, were very satisfied with the course. Those who did not like it stated that there were too few materials related directly to their specialisation, that is to automation control systems. Having heard about this gamified course, one student expected it to be like a typical game, but it was not, and they did not like it; they, however, did not explain what the term ‘game’ meant for them. Much of the appreciation resulted from the course:

- being fun,
- having a wide selection of interesting materials,
- having a substantial number of quizzes,
- having a well-organised structure.

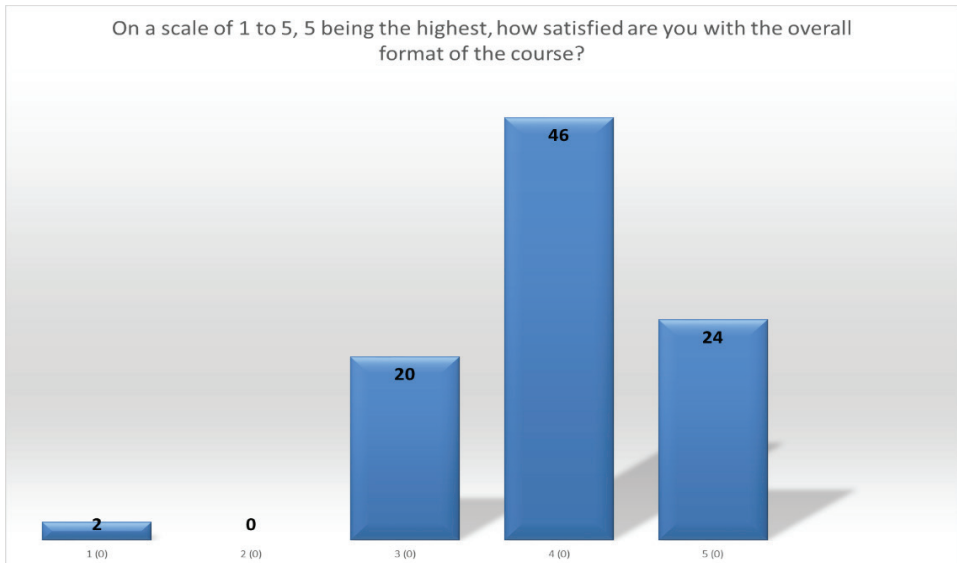


Figure 3. Participants' satisfaction with the course (in numbers)

Some respondents added that they had learnt more intensively and, in their understanding, their progress had been faster than in a traditional language classroom.

The Kruskal-Wallis test confirmed that the multiple comparisons between the results of rate gamification experience (ordinal scale 1–5) were non-significant across four faculties ($p = 0.613$, $p > 0.05$) (Figure 5). They, however, gave a significant insight into online learning. The findings indicate that all the students, irrespective of the faculty they study in, enjoyed the gamified format of the course.

What is more, they particularly appreciated the content, i.e. the authentic resources and the quizzes showing contextualised specialist language.



Figure 4. Gamification experience (in percentage)

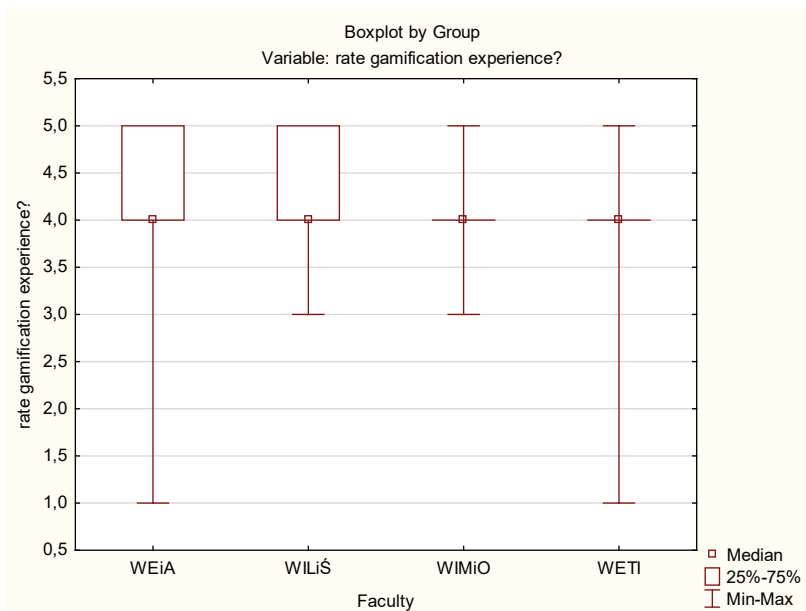


Figure 5. Comparison of gamification experience across four groups

Master’s students, who are already long-life learners of English, are difficult to reach and motivate because their needs vary depending on the level of their language skills, learning experiences, attitude towards group classes and attending English language courses at university. A new gamified educational setting was positively assessed by the respondents and the commitment of the developer to quality was acknowledged – the course was highly rated in terms of quality learning (Figure 6). The students were actively and purposefully engaged in studying to improve their competence. As many as 82.6% of the participants agreed that this new format with its authentic materials and matching activities met their expectations regarding the quality of university education.

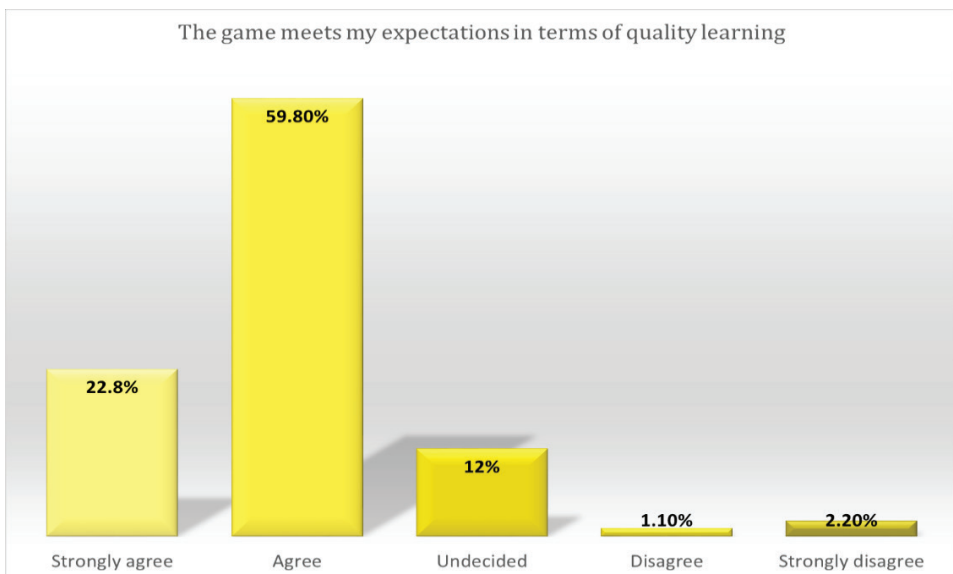


Figure 6. Expectations and quality learning (in percentage)

The answers to the question about whether or not the course is worth recommending are consistent with those about quality learning. The vast majority of the respondents would recommend the course to their peers – with positive responses reaching 91.4% (Figure 7). The codes in the qualitative research included “innovation”, “novelty” and “challenge”, and the findings are consistent with the quantitative results. Only two students are not willing to recommend it and another five had no opinion. It could be hypothesised that this course format was not up to their liking – the negative comments were that it was boring, monotonous, and that there were too many resources and too difficult quizzes. Some students were surprised that it was so demanding.

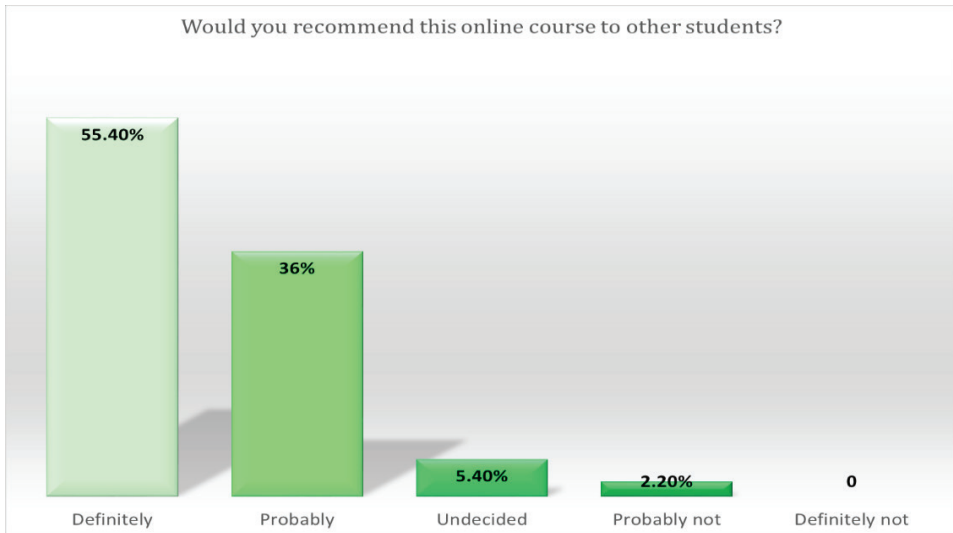


Figure 7. Suitability for Other Students (in percentage)

Conclusion

The new course in professional English for master's students, developed in a gamified e-learning environment, aimed to:

- create a more engaging educational setting than a traditional classroom, which would stimulate students to more intensive learning;
- encourage students to learn contextualised language actively and increase their knowledge of correct structures;
- personalise learning experiences;
- enable students and tutors to gain new experiences by using engaging methods and techniques. The research results show that all the aims have been fulfilled.

The lecturers to whom the course was presented were willing to offer it to their students, and were interested in becoming tutors on it.

Due to non-linear paths that allowed for personalisation, the students were able to choose learning strategies and plan their goals. This was a move towards introducing a more student-centred approach than in typical GUT's online programmes. The gamified classroom developed for master's students of science and technology concentrated on improving both hard and soft skills (Mokwa-Tarnowska, 2018). The former included the knowledge of vocabulary items and phrases in specific technical and formal contexts that might be useful to them in

their future jobs. The latter targeted analytical, critical and reflective thinking, time management, creativity, adaptability, work ethic and attention to detail.

The course was perceived to be attractive and engaging partly due to its gamified format, but predominantly because its resources were authentic materials that focused on modern technological advances, interesting and provocative ideas, future trends and probable developments. The storyline and the board game-like structure encouraged the students to study areas unrelated to their specialism that they would otherwise not even think about considering, which was a substantial benefit of gamification. The emphasis in the course was more on education than entertainment. However, the slightly out of this world context, a bit of fun inherent in intertextual elements, and the career incentive of reaching the top of a social hierarchy seem to have enhanced the students' learning experience.

References

- Cardinot, A., & Fairfield, J.A. (2022). Game-based learning to engage students with physics and astronomy using a board game. In *Research Anthology on Developments in Gamification and Game-Based Learning* (pp. 785–801). IGI Global. <http://dx.doi.org/10.4018/IJGBL.2019010104>.
- Chans, G.M., & Portuguese Castro, M. (2021). Gamification as a strategy to increase motivation and engagement in higher education chemistry students. *Computers*, 10(10), 132. <https://doi.org/10.3390/computers10100132>.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (eight edition). Abingdon, Oxon. <https://doi.org/10.4324/9781315456539>.
- Connolly, T.M., Boyle, E.A., MacArthur, E., Hainey, T., & Boyle, J.M. (2012). A systematic literature review of empirical evidence on computer games and serious games. *Computers & education*, 59(2), 661–686. <https://doi.org/10.1016/j.compedu.2012.03.004>.
- Dehghanzadeh, H., Fardanesh, H., Hatami, J., Talaei, E., & Noroozi, O. (2021). Using gamification to support learning English as a second language: a systematic review. *Computer Assisted Language Learning*, 34(7), 934–957. <https://doi.org/10.1080/09588221.2019.1648298>.
- Donelan, H., K. Kear & Ramage, M. (2010). *Online communication and collaboration: A reader*. London, New York: Routledge. ISBN 9780415564786.
- Gros, B. (2007). Digital games in education: The design of games-based learning environments. *Journal of research on technology in education*, 40(1), 23–38.
- Hainey, T., Westera, W., Connolly, T.M., Boyle, L., Baxter, G., Beeby, R.B., & Soflano, M. (2013). Students' attitudes toward playing games and using games in education: Comparing Scotland and the Netherlands. *Computers & Education*, 69, 474–484. <https://doi.org/10.1016/j.comp.edu.2013.07.023>.
- Kalisz, R., & Kubiński, W. (1996). Categories of game and sport discipline. An exercise in prototype description. In K.A. Sroka (Ed.) *Kognitive Aspekte der Sprache*, Tübingen: Max Niemeyer Verlag. 115–120.
- Kalogiannakis, M., Papadakis, S., & Zourmpakis, A.I. (2021). Gamification in science education. A systematic review of the literature. *Education Sciences*, 11(1), 22. <https://doi.org/10.3390/educsc11010022>.

- Kołodziejczak, B., Mokwa-Tarnowska, I. & Roszak, M. (2017). Autentyczność na zajęciach zwiększających kompetencje w użyciu specjalistycznego języka angielskiego [Authenticity in developing English for specific purposes]. *Linguodidactica*, tom XXI, 147–163. <http://hdl.handle.net/11320/6747>.
- Kövecses, Z. (2005). A broad view of cognitive linguistics. *Acta Linguistica Hungarica*, 52(2–3), 135–172. Print: ISSN 2559-8201; Online: ISSN 2560-1016.
- Lakoff, G. (1987). *Women, fire, and dangerous things: what categories reveal about the mind*. Chicago and London: The University of Chicago Press.
- Miller, C.T. (Ed.). (2008). *Games: Purpose and potential in education*. Springer Science & Business Media.
- Mokwa-Tarnowska, I. (2017). *E-learning i blended learning w nauczaniu akademickim: zagadnienia metodyczne [E-Learning and blended learning in academic education: teaching aspects]*. Gdańsk: Wydawnictwo Politechniki Gdańskiej. ISBN/ISSN: 978-83-7348-613-3.
- Mokwa-Tarnowska, I. (2018). Rozwijanie umiejętności miękkich na zajęciach wspomaganych narzędziami online – kurs języka angielskiego technicznego [Developing soft skills during web-enhanced classes – Technical English course]. *Zeszyty Naukowe Wydziału Elektrotechniki i Automatyki PG*. Gdańsk: Wydawnictwo PG. 58, 51–56. ISSN 2353-1290.
- Mokwa-Tarnowska, I., & Tarnowska, V. (2022). The Impact of support for language development in online classes at Gdansk University of Technology during the COVID-19 pandemic. *International Journal of Research in E-learning*, 8(1), 1–24. <https://doi.org/10.31261/IJREL.2022.8.1.04>.
- Pan, Y., Ke, F., & Xu, X. (2022). A systematic review of the role of learning games in fostering mathematics education in K-12 settings. *Educational Research Review*, 100448. <https://doi.org/10.1016/j.edurev.2022.100448>
- Peterson, M., White, J., Mirzaei, M.S., & Wang, Q. (2022). A review of research on the application of digital games in foreign language education. *Research Anthology on Developments in Gamification and Game-Based Learning*, 1948–1971. <https://doi.org/10.4018/978-1-7998-2591-3.ch004>.
- Reinfried, M. (2000). Can radical constructivism achieve a viable basis for foreign language teaching? – A refutation of the ‘Wolff-Wendt’ theorem. *EESE 8/2000*. Retrieved from http://webdoc.gwdg.de/edoc/ia/eese/artic20/marcus/8_2000.html (accessed 04.10.2022).
- Rincon-Flores, E.G., & Santos-Guevara, B.N. (2021). Gamification during Covid-19: Promoting active learning and motivation in higher education. *Australasian Journal of Educational Technology*, 37(5), 43–60. <https://doi.org/10.14742/ajet.7157>.
- Saxena, M., & Mishra, D.K. (2021). Gamification and Gen Z in Higher Education: A Systematic Review of Literature. *International Journal of Information and Communication Technology Education (IJICTE)*, 17(4), 1–22. <https://doi.org/10.4018/IJICTE.20211001.oa10>.
- Squire, K. (2003). Video games in education. *International Journal of Intelligent Games & Simulation*, 2(1), 49–62. ISSN 1477-2043.
- Squire, K., & Jenkins, H. (2003). Harnessing the power of games in education. *Insight*, 3(1), 5–33. ISSN 2156-4868.
- Udeozor, C., Toyoda, R., Russo Abegão, F., & Glassey, J. (2022). Digital games in engineering education: systematic review and future trends. *European Journal of Engineering Education*, 1–19. <https://doi.org/10.1080/03043797.2022.2093168>.
- Wittgenstein, L. (2009). *Philosophische Untersuchungen, Philosophical Investigations*. Translated by G.E.M. Anscombe, P.M.S. Hacker and Joachim Schulte. Wiley-Blackwell. ISBN 978-1-4051-5929-6.

Atrakcyjność grywalizacji dla studentów II stopnia nauk technicznych

Streszczenie

Uniwersytety oferują studentom studiów magisterskich, którzy chcą poprawić swoje umiejętności językowe, różne środowiska uczenia się – od tradycyjnych zajęć po rozbudowane programy e-learningowe. Program nauczania technicznego języka angielskiego, który jest inspirujący i stymulujący dzięki autentycznym materiałom wykorzystywanym w środowisku zgryalizowanym, może skutkować pozytywnymi efektami uczenia się i zwiększonym poziomem satysfakcji wykładowców i studentów. Ci pierwsi znajdują nowe wyzwania pomagające zapobiegać wypaleniu zawodowemu, a drudzy mają szansę rozwinąć umiejętności zarówno twarde poprzez kontakt ze skontekstualizowanym, profesjonalnym językiem angielskim, jak i miękkie, w tym myślenie analityczne, refleksyjne i krytyczne. Zróżnicowane interakcje online, polegające na wyszukiwaniu informacji w autentycznych zasobach i wykonywaniu zadań umożliwiających przejście na wyższy poziom gry, mogą skutecznie przygotować uczniów na wyzwania, jakie napotkają w życiu zawodowym. Mogą też pobudzić wyobraźnię i uwolnić twórczy potencjał edukatorów zaangażowanych w tworzenie tego typu kursów oraz uczestników znudzonych szkolną rutyną i podręcznikami. Zgryalizowany kurs języka specjalistycznego może stać się wysoce motywującym środowiskiem, w którym młodzi ludzie rozwiną swoją kreatywność, biegłość językową i zdobędą wiedzę techniczną nie tylko w dziedzinach, które ich interesują. Przedstawione powyżej idee zostaną poparte opiniami studentów wyrażonymi podczas pilotażowego kursu zgryalizowanego udostępnionego na platformie Moodle, prowadzonego na Politechnice Gdańskiej w semestrze letnim 2021/2022.

Słowa kluczowe: Grywalizacja, specjalistyczny język angielski, kognitywizm, umiejętności miękkie

Ивона Моква-Тарновска, Вивиана Тарновска, Магдалена Рошак

Привлекательность геймификации для студентов второго цикла технических наук

Аннотация

Университеты могут предложить своим магистрантам, желающим улучшить свои языковые навыки, различные условия обучения. Они могут варьироваться от традиционных занятий до онлайн-программ, эквивалентных обучению в кампусе или выходящих за его пределы. Изучение технического английского языка по учебной программе, которая вдохновляет и стимулирует благодаря когнитивистскому подходу, используемому в игровой среде, может привести к положительным результатам обучения и повышению уровня удовлетворенности как преподавателей, так и студентов. Первые могут найти новые задачи, помогающие предотвратить выгорание, вторые имеют возможность развивать твердые и социальные навыки, включая аналитическое, рефлексивное и критическое мышление, с помощью контекстно-зависимого языка. Взаимодействия, построенные вокруг онлайн-мероприятий, которые включают поиск информации в ресурсах на основе аутентичных материалов и выполнение действий, которые позволяют перейти на следующий уровень, могут эффективно подготовить студентов

к проблемам, с которыми они столкнутся в своей профессиональной жизни. Они также могут поразить воображение и раскрыть творческий потенциал педагогов, занимающихся их развитием, и участников, уставших от школьной рутины и учебников. Таким образом, игровой языковой курс для конкретных целей может стать высоко мотивирующей средой, в которой молодые люди развивают свои творческие способности, владение языком и знание технологических достижений не только в интересующих их областях; они также знакомятся с новыми методами обучения благодаря применению элементов игрового дизайна. Представленные выше идеи будут подкреплены мнениями и установками студентов, высказанными в ходе опроса и во время пилотного курса Moodle в игровом формате, проведенного в Гданьском технологическом университете в летнем семестре 2021/2022.

Ключевые слова: геймификация, ESP, технический английский, когнитивизм, мягкие навыки

Iwona Mokwa-Tarnowska, Viviana Tarnowska, Magdalena Roszak

El Atractivo de la Gamificación para Estudiantes de Maestría en Ciencias y Tecnología

R e s u m e n

Las universidades pueden ofrecer a sus estudiantes de maestría que desean mejorar sus habilidades lingüísticas diferentes entornos de aprendizaje. Pueden ir desde clases tradicionales hasta programas en línea equivalentes a una experiencia en el campus o incluso más allá. Aprender inglés técnico a través de un currículum que es inspirador y estimulante debido al enfoque cognitivista utilizado en un entorno gamificado puede resultar en resultados positivos de aprendizaje y niveles aumentados de satisfacción tanto para los profesores como para los estudiantes. Los primeros pueden encontrar nuevos desafíos para prevenir el agotamiento, mientras que los últimos tienen la oportunidad de desarrollar habilidades técnicas y blandas, incluyendo pensamiento analítico, reflexivo y crítico, a través del lenguaje específico del contexto. Las interacciones estructuradas alrededor de actividades en línea que involucran la búsqueda de información en recursos basados en materiales auténticos y la compleción de actividades que permiten el progreso al siguiente nivel pueden preparar efectivamente a los estudiantes para los desafíos que enfrentarán en su vida profesional. También pueden capturar la imaginación y liberar el potencial creativo de los educadores involucrados en su desarrollo y de los participantes aburridos con la rutina escolar y los libros de texto. De esta manera, un curso de lenguaje gamificado para propósitos específicos puede convertirse en un entorno altamente motivador, en el que los jóvenes desarrollan su creatividad, competencia lingüística y conocimiento de los avances tecnológicos no solo en los campos de su interés; también están expuestos a nuevas prácticas de aprendizaje debido a la aplicación de elementos de diseño de juegos. Las ideas presentadas arriba serán apoyadas por las opiniones y actitudes de los estudiantes expresadas en una encuesta y durante un curso piloto Moodle en formato gamificado llevado a cabo en la Universidad Tecnológica de Gdansk en el semestre de verano de 2021/2022.

Palabras clave: gamificación, ESP, inglés técnico, cognitivismo, habilidades blandas