Environment and Social Psychology (2024) Volume 9 Issue 10
doi: 10.59429/esp.v9i10.3073

RESEARCH ARTICLE

Inclusive educatoin and game-based learning for learners with disabilities: Perspectives from teachers in Bulgaria

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ABSTRACT

The aim of this study is to explore the role of game-based learning (GBL) approaches when utilised for the needs of learners with disabilities. The research explores the strategies and practices employed to make teaching and learning more inclusive and accessible for learners with disabilities and discusses educators' perspectives and attitudes on the affordances and constraints of educational games for learners with disabilities. From a theoretical point of view, our study is based on the social model of disability. Data were gathered and analyzed through 51 in-depth interviews with educators and specialists across all educational levels in Bulgaria, including general and special education schools, as well as universities. The key findings following thematic analysis include: a common systemic framework highlighting the interactions between the school, teachers, and parents, the diversity in the strategies and educational procedures employed in the country; skills gaps and training needs for educators; more proactive approach to using educational games by special educators compared to general education; and constraints stemming from strict curricula, regulatory policies, and technological challenges. The paper identifies key aspects that need to be considered for leveraging GBL towards more inclusive educational practices for learners with special educational needs.

Keywords: inclusive education; learning disability; game –based learning; educational technologies

1. Introduction

Education is a fundamental human right, as declared by the Universal Declaration of Human Rights in 1948[1], and reaffirmed by the United Nations Convention on the Rights of the Child[2] and the Salamanca Statement on the Implementation of Education for Children with Special Educational Needs[3]. The UN Convention on the Rights of Persons with Disabilities further emphasizes the importance of advocating for the well-being and rights of individuals with disabilities, including those with communication disabilities, on a global scale[4]. Inclusive education, which seeks to provide equitable learning opportunities for all learners, is an essential aspect of fulfilling these human rights. It aims to address the diverse needs of learners, including those with disabilities, by removing barriers to education and ensuring that every learner is valued and supported. The goal is not only to provide access to education but also to foster environments where learners of all abilities can thrive socially, emotionally, and academically. This involves collaboration among parents, caretakers, teachers (including special education teachers), and specialists such as psychologists,

ARTICLE INFO
Received: 24 September 2024 | Accepted: 15 October 2024 | Available online: 12 November 2024

CITATION
Lendzhova V. Inclusive educatoin and game-based learning for learners with disabilities: perspectives from teachers in Bulgaria. *Environment and Social Psychology* 2024; 9(10): 3073. doi: 10.59429/esp.v9i10.3073

educational psychologists, occupational therapists, speech therapists, and healthcare professionals, all of whom play vital roles in the educational process. Contemporary educational systems face numerous challenges, among which is the increasing number of learners with disabilities and special educational needs. These learners may face a range of challenges, including difficulties with reading and comprehension, dysgraphia, dyscalculia (a learning disorder affecting numerical understanding and mathematical operations), developmental dysphasia (a language disorder affecting speech and comprehension), dyslexia, and autism, among other conditions. These disorders often coexist, complicating the educational needs of these learners. Inclusive education strives to recognize each learner's unique abilities and disabilities, helping them broaden their perspectives, develop their skills, and enhance their self-confidence and independence[5]. For learners with disabilities, this means creating learning environments that are not only accessible but also adaptable to their specific needs. Inclusive education fosters an atmosphere of acceptance, empathy, and respect, where the individuality and rights of every learner are acknowledged and supported. To achieve this, it is essential to provide high-quality psychological and pedagogical assistance tailored to the unique needs of learners with disabilities. This requires the creation of inclusive educational environments that promote not only academic learning but also socialization and personal development. The effectiveness of inclusive education depends on the coordination of all system components—schools, teachers, decision-makers, and policymakers across sectors such as education, healthcare, labor, and social services. Only through the collaborative efforts of all stakeholders can inclusive education be truly successful. Given these multifaceted needs, educators must re-evaluate their roles to meet the diverse demands of their learners. This includes shifting from traditional, teacher-centered methods to more inclusive, student-centered approaches that prioritize accessibility and individualized support. Teachers are no longer merely subject experts; their role is to facilitate meaningful learning experiences, helping each learner develop soft skills, critical thinking, and problem-solving abilities through authentic, contextualized educational approaches[6,7]. One effective way to create such inclusive and customized learning experiences is through the use of educational games. Game-based learning (GBL) and educational gamification provide opportunities for learners with disabilities to engage in learning that is both accessible and enjoyable. GBL can help break down barriers to learning by offering interactive, supportive environments where learners of all abilities can thrive. By integrating GBL into inclusive educational practices, educators can enhance engagement, motivation, and learning outcomes for all students, including those with disabilities.

1.1. Game-based learning as a pedagogical approach

GBL is an instructional technique that integrates educational material and learning concepts into digital games with the purpose of engaging learners[8]. The use of GBL is commonly introduced with the aim to (re)engage learners, activate their interest, and create a stimulating learning environment. GBL is not a new concept; the utilisation of computer or video games in education has been evident for more than three decades, and is growing in popularity and application as a result of improvements in information technology, availability in mobile devices, and the greater accessibility to the Internet[9,10]. Virtual environments not only reduce physical barriers but can also enhance inclusivity in educational settings, where virtual platforms are used to minimize ecological impacts while providing immersive experiences[11].

There is a vast literature discussing the utilisation and evaluation of GBL practices, reporting both on their effectiveness as well as eminent challenges[8,12]. A common attempt to make learning content more accessible involves presenting educational content through storytelling and playing games[13]. However, most of these attempts do not fully meet the students' expectations, either because the graphics or game plot do not compare with commercial games, or because educational games are mostly utilised as instruments for familiarising with factual information and do not fully exploit the benefits of playful learning for discovering

and constructing new knowledge[14]. Hence, their use is not always associated with enjoyment[15]. This presents a need for further exploring the affordances and constraints of different forms of GBL and the pedagogical context in which games are employed, including serious games, gamification, educational video games, simulation-based learning, puzzle and problem-solving games, and AR/VR games. Each form offers distinct opportunities and challenges depending on how they are integrated into educational practices.

When incorporating technology into the classroom, it is crucial to do so with a clear goal in mind and to use pedagogically-sound and research-backed methods and tools for their implementation. In the broader view, GBL involves playing games as the primary way in which learning happens. This is also referred to as 'learning through play' or 'playful learning'[16,17]. Additionally, the word "gamification" refers to the employment of a game aspect to engage people[17] and drive their behaviour in non-game contexts. Points, achievements, badges, levels, challenges, time-limited tasks, and other game features are the ones that are most frequently employed in gamification [18,19]. Within this context, a prevalent perspective, is the one which considers GBL as a method of instruction powered by gaming technology[20,21], and which inquires as to how games, such as those purchased commercially, can be employed in education to achieve the desired learning outcomes. A complementary perspective sees GBL as a pedagogical/learning innovation based on the fundamentals of game design. According to this perspective, learning environments are designed using game mechanics and game-design thinking. Game elements including role-playing, accomplishment, competition, and reward systems are frequently used in an attempt to 'gamify' learning and instructional environments[22]. Strategic use of digital platforms, as demonstrated in digital marketing strategies for diverse audiences can similarly enhance engagement and accessibility in inclusive educational environments[23].

Moreover, social media and online communities are often incorporated in the GBL context. Given that the majority of learning activities combine teacher instruction, student collaboration, and the use of technology, viewing GBL as a multidimensional framework incorporating technical, social, and pedagogical innovations seems to be the appropriate approach for exploring GBL. In the context of this study an additional variable is added to the formula, that of inclusion. In this view, GBL can provide learners with learning disabilities an avenue to be included in the learning process.

1.2. GBL for learners with disabilities

Learning disabilities range from mild disorders to severe intellectual challenges. Some learners may have limits in their ability to think conceptually, interact with others, or use practical skills in daily life[22]. Other learners struggle greatly with reading and writing, comprehending mathematical ideas, logical thinking and problem-solving, as well as dealing with schedules and routines[9,24]. The unalienable right of people with intellectual disabilities to equal opportunities in all spheres of life, including education, is increasingly recognised internationally. The growing public awareness of the requirements of students with intellectual impairments has focused researchers' attention on creating educational frameworks that are appropriately organised to encourage participation and inclusion for everyone[25].

In a continuously evolving educational system, technology provides all the necessary means to enhance the teaching and learning process. Despite the increasing trend of adopting GBL in various educational subjects, students' engagement in the learning process consists of a major challenge for the educators, especially when referring to learners with intellectual disabilities[26]. The design and implementation of educational gaming environments to enhance learners' engagement and level of understanding, is considered successful when complexity is avoided and accessibility and usability is achieved regardless of the learner's type of intellectual disability[26,27]. Therefore, despite the benefits associated with GBL, their constraints should also be explored and ways to alleviate them should be proposed. This study aims to explore the

educators' perspectives on the role, affordances, and constraints of GBL, the degree to which they utilise GBL and their strategies towards inclusive education.

The latest studies in academic literature has demonstrated that GBL can effectively improve both cognitive and adaptive skills for learners with intellectual disabilities and foster better engagement and social skills for those on the autism spectrum. For example, Jiménez, Pulina, and Lanfranchi (2015) conducted a comprehensive review of computer- and video-based GBL interventions, finding that these tools positively impacted the cognitive abilities of students with intellectual disabilities. Similarly, Tsikinas and Xinogalos (2018) reviewed studies focusing on the effects of serious games on individuals with intellectual disabilities or ASD, showing how GBL can promote both cognitive and communicative improvements, especially in more structured game environments . In various educational contexts, GBL's implementation can vary greatly. In countries such as the United States, where the Individuals with Disabilities Education Act (IDEA) ensures access to inclusive education, GBL is used to enhance academic and social outcomes. Studies from the U.S. reveal that GBL helps students with disabilities improve their problem-solving and communication skills, contributing to both academic success and greater social integration. In contrast, in lower-resource settings, the lack of technological infrastructure and teacher training poses significant barriers to the adoption of GBL. Fiuza-Fernández et al. (2022) highlight that these regions often struggle with integrating GBL due to limited access to devices and insufficient educator preparedness[28]. Furthermore, one of the key limitations identified in the literature is the generalization of game design for learners with disabilities. While GBL has proven to be effective, generic educational games may not sufficiently address the specific learning needs of students with intellectual disabilities. For instance, Brereton et al. (2006) emphasize the necessity of developing tailored game environments that accommodate different cognitive and behavioral needs. Such environments must minimize complexity and offer intuitive interfaces to cater to the diverse capacities of learners[29]. This points to a critical need for adaptive learning technologies that can tailor educational games to individual students, thereby improving both usability and engagement. The benefits of GBL are particularly evident in studies from Japan and Finland, where game-based tools have been shown to enhance both academic learning and social inclusion. These countries have designed GBL environments that are accessible and easy to use, ensuring that students with disabilities can engage with the content without being overwhelmed by complex tasks or interfaces [30].

1.3. Objective and research question

The aim of this paper is to explore the role of game-based learning (GBL) approaches in enhancing the inclusivity and accessibility of education for learners with disabilities. Specifically, it examines the strategies, practices, and attitudes of educators toward the use of educational games for learners with disabilities, and identifies key factors that could help in leveraging GBL to support more inclusive educational practices. To this end, this study aims to address the following research questions:

What educational strategies and practices are currently used in Bulgaria to enhance inclusivity and accessibility for learners with disabilities through game-based learning (GBL)? This question aims to explore the specific methods and practices that are implemented by educators to make education more inclusive and accessible for learners with disabilities, focusing on the use of GBL.

How do educators perceive the benefits and challenges of using game-based learning (GBL) for learners with disabilities? This question seeks to understand the perspectives of educators regarding both the advantages (affordances) and limitations (constraints) of using GBL as a tool to support the education of learners with disabilities.

2. Theoretical framework and methodology

2.1. Theoretical framework

From a theoretical point of view this study is based on the social model of disability[27]. The idea of justice, retribution, law and morality have always been at the basis of the functioning of the public apparatus[31]. It is developed by disability rights activists in the 1970s and 1980s and suggests that "if societies were set up and constructed in a way that was accessible for people with disabilities, those individuals would not be restricted from full participation in the world around them"[27]. In other words, the social model of disability views the origins of disability as the mental attitudes and physical structures of society, rather than a medical condition faced by an individual. Essentially, the social model advocates that individual limitations are not the cause of disability. Rather, it is society's failure to provide appropriate services and adequately ensure that the needs of disabled people are taken into account in societal organisation[26]. Building on this tenet, we aim to explore how, and indeed whether, GBL can afford inclusive learning, and identify the constraints as seen through the eyes of the educators themselves.

2.2. Research methodology

To address the research questions, a qualitative study was conducted to gather and analyse data from educators in different areas from Bulgaria. The participant selection process involved a purposive sampling technique to ensure that a diverse range of perspectives was represented. A total of 51 in-depth interviews were conducted with educators from various educational settings, including general and special education schools as well as universities. Participants included teachers, special education professionals, and educational psychologists, providing a comprehensive view of the GBL landscape across different levels of education. Data collection was conducted using semi-structured interviews that lasted between 30 to 60 minutes, allowing participants to elaborate on their experiences and views regarding GBL.

After conducting the interviews, the interview data was translated from Bulgarian to English, and then transcribed, followed by coding and thematic analysis. Initial codes were deductively extracted from the 2 research questions (strategies, tools for inclusive education, affordances, challenges of GBL, perspectives and attitudes). Additional codes and thematic categories emerged inductively during the analysis based on the gathered data. Initially coded interview data were further analysed based on newly established codes and thematic categories. The paragraphs below discuss prominent themes and key findings from analysing the interview data. Where verbatim quotes are presented, aliases are used to maintain the participants' anonymity. Ethical considerations were paramount, and informed consent was obtained from all participants, ensuring their anonymity and the confidentiality of the data collected.

Although the methodology was very well selected and developed the study has several limitations. Translation from Bulgarian to English may have resulted in loss of meaning, potentially affecting the accuracy of the analysis. The findings may also lack generalizability beyond Bulgaria due to the specific context. Researcher bias during the coding process and the subjectivity of thematic analysis could influence the interpretation of data. Additionally, the sample may not fully represent the diversity of educator experiences, and semi-structured interviews can lead to inconsistencies in data collection. The reliance on self-reported data may introduce bias, affecting the reliability of the findings.

3. Results and discussion

3.1. Special/Inclusive education in Bulgaria.

In Bulgaria, inclusive education operates within a systemic framework involving collaboration between schools, teachers, specialists, and families to support students with disabilities. Educational strategies and

practices include offering support sessions either within schools or through external centers, though the quality and availability of these resources vary. General education teachers often take on dual roles without sufficient training in special education, underscoring the need for professional development. Specialized centers provide individualized support, but a shortage of trained professionals limits effectiveness. Additionally, the rigid national curriculum constrains the flexibility needed to fully accommodate diverse learning needs. Despite these strategies and practices, gaps in teacher training, resource allocation, and curriculum adaptation continue to hinder the full implementation of inclusive education.

This 'systemic' framework highlights the close interactions between the school (and other authorities), the teachers (and other specialists), and the family (parents, guardians, caretakers), and indicates the role that each stakeholder needs to play to ensure that a constructive learning environment is created for each student. This approach seems to transpire in all levels of education and apply in general secondary education, special education schools, and universities in Bulgaria. The detailed analysis of the official procedures followed in Bulgaria is beyond the scope of this paper. Rather, the aim is to present the main areas which the teachers across the country have highlighted as important in the context of addressing learning disabilities and inclusive education.

3.2. Level of support available to students with disabilities in Bulgaria

A frequently noted issue is that, despite the distinction between general and special education teachers, the former are often required to take on responsibilities typically handled by special educators, despite lacking the necessary expertise. This challenge is compounded by inadequate resources and limited knowledge for addressing the specific needs of students with disabilities in general secondary and higher education. Teachers in general education consistently emphasized the skills gaps, training needs, and lack of support in inclusive education. Although students with documented disabilities are provided accommodations, such as extra exam time, separate testing environments, or access to computers, these measures do not always ensure optimal educational support. Contributing factors include teachers' insufficient expertise in identifying disabilities, limited information sharing (often to protect privacy), rigid curricula that are rarely adapted for students with disabilities, high teaching loads, and the reluctance of some students or families to disclose disabilities due to concerns about discrimination or marginalization. Furthermore, students with disabilities joining general secondary education (high schools), are entitled to a number of support sessions. In Bulgaria these can be provided by counsellors, or subject teachers, within the school unit during school time. Parents may also provide additional, private support to their children through therapy sessions with specialists. Also, special sessions may be covered in support centres which are external to the school. it is important to be noted that the subject-related sessions are not delivered by special educators (as may be the case in primary schools and special education schools). Rather, the same teachers who teach mathematics, history, languages, physics, and other core subjects, will devote additional time to deliver the same material to the eligible students again. The purpose of these sessions is to re-solve the practical exercises or review the reading and comprehension passages with the students. On one hand, the participants identified some benefits in this approach, that is, since they are teaching the student in the general class, the student is familiar with them which helps in establishing channels of communication and trust, plus it ensures consistency in the teaching approaches used and the materials covered during normal class time and the support session. On the other hand, they highlighted the additional effort they had to invest to learn more about their students' disabilities and adjust their approach accordingly. Another emerging theme was that despite their willingness to help their students, many teachers' felt that their efforts and the amount of time devoted is not always sufficient to make a difference, since students with disabilities joining general education are entitled to support sessions only for a few hours per week, based on the severity of the

disability. Also, in most cases, due to lack of resources, it is not possible to provide one-to-one support sessions, and students may be grouped together. As a result, learners with different disabilities or even from different grades are grouped together which often constraints the work that can be done. Despite these challenges all study participants appeared to be self-ware on the impact of these sessions on their students' wellbeing:

"*Supporting children with special educational needs can be challenging, yet rewarding and deeply compassionate. It demands a great deal of patience, focus, and empathy for children with diverse abilities and requirements. This role necessitates a strong commitment to one's work and a genuine belief in the impact of the support provided in order to make a meaningful difference.*" (Female 46, Blagoevgrad special education teacher);

"*Often, during our sessions, students primarily want to share their personal experiences and talk about their interests. They view these sessions as an opportunity for communication, which is difficult to achieve in a regular classroom setting with over 20 students and a rigid syllabus that the teacher must cover within a limited time.*" (Female, 32, Blagoevgrad, support teacher).

Even though official procedures are in place for the provision of support to learners with disabilities, several differences were identified, including variations in the practices employed for the assessment and handling of each individual case, the diverse evaluation criteria pertinent to students with learning and/or intellectual disabilities, and the allowances and level of support available.

Depending on the individual needs and abilities of the student, they may attend a general education school, a special education school, or split their time between their school and a centre for special educational support. At these support centers, learners with disabilities receive personalized assistance from specialists such as speech therapists, psychologists, special educators, and support teachers. Given the wide range of special educational needs, students may follow individualized curricula and assessment plans tailored to their specific needs. These assessments may use qualitative measures, such as "Coping," "Facing difficulties," or "Failing," rather than traditional quantitative grading. While these strategies aim to promote inclusive education and ensure equal opportunities for all learners, participants in the study noted that students, especially those with severe intellectual disabilities, often spend significant time with non-specialists when dividing their schedule between general schools and support centers.

Most respondents reported that the educational support provided in Bulgaria does not sufficiently address the individual needs of students. Instead, the quality of support often relies on the willingness of staff or the school to go beyond standard expectations to offer an enhanced educational experience. However, this is challenging due to inadequate resources and insufficient staff training. According to Bulgarian educational support policy, schools can decline the enrollment of students with disabilities if they are unable to meet their special educational needs[27]. As a result, common practices include redirecting students to other schools, requiring them to repeat the academic year, or providing substandard educational support from staff who may lack expertise in special education. While general education teachers may be experts in their subjects, they are not trained to work with students with disabilities, leading to mismatched teaching methods, conflicts between parents and educators, and tension between specialists and general teachers[27]. Additionally, participants noted that students with disabilities who are excluded from schools due to inadequate accommodations often struggle to adapt to new educational environments, forcing parents to make difficult decisions, such as enrolling their child in a private school. Teacher training needs:

From data collected it is observed that the fundamental principles of inclusive education do not uniformly apply in public schools in Bulgaria, many of which do not have the capacity to provide high-

quality, individualised support and reasonably accommodate the needs of students with disabilities. It is worth mentioning that variation between schools in the country is large. Even in the Centres for Special Educational Support, there is still shortage of experts. As a teacher with thirty years of experience explained,

"I work at a Centre for Special Educational Support in a small provincial town. Although the center has a team of professionals, including a psychologist, speech therapist, special educator, rehabilitator, and educator, we still face a shortage of trained teachers. This shortage hampers our ability to fully assess each student's unique challenges and delays the process of directing them to the appropriate specialist, which slows down their overall integration." (Female, 46, Sofia, special education teacher).

The individual needs of the students with disabilities are determined by support teachers. Therefore, another challenge which special support educators are facing, is that the administrative duties and the time-consuming implementation of the legal and regulatory documents in most cases takes precedence, while the practical application and implementation of their duties is often relegated. One of the most profound findings was the great discrepancy in the opportunities students with disabilities in general versus special education. When students join a general secondary school, it is the responsibility of the parents to ensure their profile is available to the school. With the permission of the student's parents or guardians, a group of specialists (including counsellors, educational psychologists, occupational therapists, developmental and healthcare professionals, and school leaders, amongst others) is responsible for composing a report, which following various steps, assessments, and approvals from the relevant ministry and regulatory authorities, the student may be approved for specific provisions, and corresponding recommendations are made to the school and the family. Provisions may include a subset of the following, depending on the disabilities: exemptions from secondary modules, a number of extra support sessions (with the subject-teachers), counselling sessions, extensions of exam duration or simplification of exam questions, surrogate for writing down exam answers, and replacing written with oral exams. Beyond these allowances, however, students with disabilities (irrespective of the severity), registered in general education, are examined with the same examination papers, and on the same syllabus as every other student. The rationale behind this is that all students need to be assessed on the same material and with the same criteria. Although this may work for students with mild learning disorders, it is not always effective when students have a combination of intellectual and motor/physical disabilities.

Furthermore, a commonly reported challenge in the general education system is the extensive and strict syllabus. As a high school counsellor explained,

"The constant pressure to cover the entire curriculum significantly restricts what we, as counsellors, can accomplish with students with disabilities. Some students are classified as 'educable' or 'trainable,' while others have severe conditions, including very low intellectual capacity, reduced sensory and physical abilities, or a combination of intellectual and physical disabilities. In such cases, the responsibility falls on special educators or counsellors, who have only limited time with these students in general education settings, making it difficult to address all the necessary aspects of their education." (Male, 38, Blagoevgrad , high school teacher).

In contrast with the heavy curricula challenging both the students and the teachers in general education high schools, special education schools in Bulgaria are on the other extreme with no prescribed syllabus. The emphasis in special education as shared by the special teachers and other specialists who participated in the study, truly captures the essence of inclusion, accessibility, and wellbeing of students with disabilities.

"When working with students who have serious conditions or disabilities, our goal as special educators is to elicit a meaningful response, such as a smile or direct eye contact. We refer to these interactions as

"meaningful moments." By encouraging and building on these moments, we aim to help the student develop skills that can be applied to other activities. For instance, students can be trained to solve puzzles using only their eye gaze and eye contact with the aid of a special camera. Once they master this skill, they can manipulate visual objects on a screen, select options, or even type on an on-screen keyboard using only their eyes." (Male, 42, Sofia, special teacher).

Nevertheless, all the special teachers seem to agree that if they had at least some general guidelines or an outline of a syllabus to follow, this would help them greatly in their role and would also allow a more consistent approach among special teachers and specialists. This indicates that there are still several improvements to be made to facilitate the provision of appropriate support towards a fully inclusive educational system.

3.3. Affordances and constraints of GBL for learners with disabilities

Having explored how the support systems for learners with disabilities work in the Bulgaria, at educational level, and from the perspective of different specialists, the participants were asked about the educational tools and digital technologies they utilise in their teaching or therapy sessions with their students, followed by a discussion focusing particularly on GBL.

An intriguing finding was the fact that, despite the increasing uptake of mobile devices such as smartphones and tablet computers, among high school students, teachers and counsellors in general secondary education do not utilise digital technologies beyond simple PowerPoint presentations, often embedded with gamified elements such as quizzes. Rather, most of them opt for more traditional techniques using cards, colour coded paper prompts, and other paper-based techniques, for several reasons. Firstly, the contact time for the support sessions is limited and there is simply not enough space for exploration and playing games. Often, the available time is barely enough for covering the required lesson plan. Secondly, these supplementary support sessions often take place in classrooms which do not always have a computer or tablet available. Also, students are not allowed to use personal computers or mobile devices during school time. This further eliminates efforts to technologically-enhance the students' learning experiences. Thirdly, since the students with disabilities will have to be examined on the same material in order to be awarded the same high school leaving certificate as all other students, the learning process becomes more rigid. More emphasis is placed on the actual learning materials and less emphasis is placed on exploration, tinkering, problem solving, reasoning, communication, and collaboration skills, and raising self-confidence. Finally, in most cases teachers may lack the necessary skills or have insufficient training both in terms of inclusive education and in terms of utilising technology in their teaching.

Compared to general education, where teachers prefer paper-based or at most PowerPoint presentations, in Special Education, technology and gamified activities, and digital games (such as puzzle games, numerical games, and mobile games featuring drag and drop activities), play a central role in everyday learning activities. In special education, when asked specifically to discuss their perspectives and opinions about GBL, all participants identified affordances such as raising learner engagement, developing motor and eye-hand coordination skills, adding rewards to stimulate student motivation, and making students happy. Furthermore, special education teachers appeared far more open to new ideas compared to teachers in general education and more willing to try new things out. At the same time, the lack of strict curricula encourages this exploration in the context of special education, hence allowing teachers the flexibility to identify games which are more applicable to each learner's skills and capabilities. However, in addition to the affordances, several constraints were also evident in special education schools.

Firstly, there are inherent technological infrastructure limitations. The Internet connection is unreliable in most schools, connectivity (cabled or wireless) is not available in all rooms of the school, and most PCs are outdated and slow which renders them inappropriate for playing games or web browsing. Secondly, as with general education, before any technological educational platform, web or mobile application is officially embedded in the learning process or shared with the students, it must be approved to ensure it follows the curriculum strictly.

"The ministry provides only a limited set of approved resources, with many materials being blocked for safety and security reasons. While these restrictions are in place for protection, they also limit our ability and flexibility to use openly available tools and games in the educational process." (Male, 48, Sofia, special teacher).

Thirdly, a common challenge with GBL discussed by most participants across all levels of education is the fact that it is not straightforward to discover games which satisfy specific learning objectives, which are available in the required language, with embedded assessment and progress monitoring features, appropriate feedback mechanisms, and the right level of difficulty to match the educational objectives at hand. This was highlighted by different specialists:

"The time and effort each specialist will devote for developing new learning materials or adapt existing ones, will depend on each specialist, how many years of experience they have, and their previous experiences working with particular disabilities or learners with similar age or similar characteristics. But the content needs to be adapted to each case to match the learning outcomes or individual student needs" (Female, 37, Blagoevgrad, special teacher);

"An important aspect when it comes to choosing which games, tools, or applications to use is their capability to keep a record for each student, like an archive to show the student's activity and progress over time. This would help the coordination and collaboration between different specialists in the long term" (Male, 35, Blagoevgrad, special teacher).

The practical challenges have to do with the design of the games and gamified activities as well as the content. From teachers' point of view, the challenge is to create a resource which is easily adjustable while also allowing teachers to track their students' engagement. For example, it is important to know how many times they played a game, up to which level they have reached so they can trace their development, how much time they have engaged, and other useful information. Another desirable feature is to find games which are available offline. Furthermore, all specialists emphasised the importance of audio feedback and rewarding sounds (such as clapping or celebrating). Similarly, while animations and sounds should be eliminated during the gameplay or while the gamified learning activity unfolds, they are essential at the end of each question or level to emphasise the completion of the level (e.g., flying balloons or fireworks may animate when completing a level).

Overall, for special teachers, the affordances of GBL and educational technologies surpass the constraints. In special education technology is a vital tool for teaching and learning. Touched-based devices such as tables and switches are the preferred input devices for students with disabilities.

"Over time, with my colleagues we have accumulated a rich repository of resources, including games, gamified learning material and interactive content, which can be easily customised, personalised, and adjusted to ensure we achieve a positive impact on our students' learning and development" (Female, 48, Blagoevgrad, special teacher).

Commonly used learning activities or educational games used with students include: language games, activities with sounds, activities with images, memory games, puzzles, and math games.

"Successful tools, games, applications are those who use colours, appropriate colour-coded content, music and audio for feedback. We also have an interactive floor which responds to the students' movements and helps them interact with their environment (Female, 38, Blagoevgrad, teacher in higher education).

For Bulgarian teachers, digital games and gamification have an important place in education.

"When new knowledge is presented as a game, learning becomes easier and when children actively participate in the teaching process they learn faster" (Male 36, Blagoevgrad, teacher in higher education). With regards to students with disabilities, introducing games encourages inclusion and promotes accessibility. When students with disabilities see a positive example from their classmates, this activates their engagement and participation, which helps them make more progress.

Based on the findings of this study, several recommendations can be made for future practice in inclusive education. First, there is a pressing need for enhanced professional development opportunities focused on GBL methodologies and inclusive teaching practices. Educational institutions should prioritize training programs that equip educators with the skills and knowledge necessary to implement GBL effectively. Second, collaboration between special and general education teachers should be encouraged to facilitate knowledge sharing and the development of best practices. Lastly, policymakers should consider revising curricula and regulatory policies to allow for greater flexibility and innovation in teaching practices, enabling educators to integrate GBL in a way that meets the diverse needs of their students. By addressing these areas, the educational landscape for learners with disabilities can be transformed to be more inclusive and equitable.

4. Conclusions

The analysis of the data gathered from educators in Bulgaria, indicates that teachers and educational specialists are aware of the value of using digital games and consider games an effective educational tool. It is evident that GBL transforms the way a classroom is arranged as a learning space physically and also the way teachers manage the instructional process. Playing games can give the possibility for students with disabilities to feel engaged in the teaching process, rather than excluded. This can also have an impact on how students perceive learning with games, learning with others, or simply having fun, depending on how GBL is blended in the broader learning process. However, various external constraints (pedagogical, technological, and institutional) constrain their utilisation. Furthermore, there is no clear framework for blending GBL in the teaching and learning process. According to participants most of the time digital games were employed as a reward or a tool to achieve a specific curriculum target or learning objective. Although educators from Bulgaria discussed the positive impact of playing games on developing transferable skills such as problem solving, critical thinking, collaboration and creativity, there is no indication that teachers know how to design the GBL space to achieve this.

Another important observation is that despite the fact that both students and teachers are positively triggered towards games, this is not reflected in the employed teaching and learning practices. Some of the inherent constraints of the educational system, and of the available games alike, will have to be mitigated to realise the full potential of GBL. A key consideration is teacher training both in terms of inclusive education and in terms of developing successful games and GBL strategies. This endeavour involves bringing together a variety of emerging technologies, customising the flow and density of information, incorporating rewards and other multimedia and multimodal elements to activate engagement and motivation, and personalising

learning experiences so that all learners are included in the learning process. A lot can be learned from the inexhaustible energy, passion, and caring approach of special educators whose aim is to cultivate and nurture their students' abilities, using their special needs not as an obstacle but rather as an opportunity to embrace diversity and promote their students' favourite activity: playing and having fun. Ultimately, the main conclusion reached by the study is that there is a major need to raise awareness about inclusive education and equality education for all – not just in special education schools, but in every classroom, and in our society at large.

Acknowledgements

This article has been developed in the framework of the project entitled 'INCLUDEME – Inclusive Digital Environments to Enable High-Quality Education for Disadvantaged and Disabled Learners', Grant Agreement 621547-EPP-1-2020-1-RO-EPPA3-IPI-SOC-IN.

Conflict of interest

The authors declare no conflict of interest.

Institutional review board statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of South-West University "Neofit Rilski", Blagoevgrad Informed consent was obtained from all subjects involved in the study.

References

1. Universal declaration of human rights. (1948). *UN General Assembly*, *302*(2), 14-25
2. Convention on the Rights of the Child. (1989). *United Nations, Treaty Series*, *1577*(3), 1-23.
3. UNESCO (1994) *Salamanca Statement and Framework for Action on Special Needs Education*
4. UN (2006). United Nations convention on the rights of persons with disabilities.
5. Hunt, P. F. (2011). Salamanca Statement and IDEA 2004: Possibilities of practice for inclusive education. *International Journal of Inclusive Education*, *15*(4), 461-476. https://web.mon.bg/bg/57
6. Barab, S. A., Scott, B., Siyahhan, S., Goldstone, R., Ingram-Goble, A., Zuiker, S. J., & Warren, S. (2009). Transformational play as a curricular scaffold: Using videogames to support science education. *Journal of Science Education and Technology*, *18*, 305–320
7. Squire, K. (2006). From content to context: Videogames as designed experience. *Educational researcher*, *35*(8), 19–29.
8. Tlili, A., Huang, R., Shehata, B., Liu, D., Zhao, J., Metwally, A. H. S., ... & Burgos, D. (2022). Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis. *Smart Learning Environments*, 9(1), 1-31.
9. Brom, C., Šisler, V., & Slavík, R. (2010). Implementing digital game-based learning in schools: augmented learning environment of 'Europe 2045'. Multimedia systems, 16, 23-41.
10. Barab, S., Gresalfi, M., Arici, A., Ingram-Goble, A., & Pettyjohn, P. (2010). Transformative Play-Games as 21st Century Curriculum.
11. Karadzhov, V., & Kirilov, S. (2023). Virtual Horizon – Unveiling the Ecological Impact of Virtual Tourism. Journal Pirinski Knijovni Listi, 14, 38-49.
12. Saridaki, M., Gouscos, D. and Meimaris, M.G. (2009). Digital games-based learning for students with intellectual disability. In: Games-Based Learning Advancements for Multi-Sensory Human Computer Interfaces: Techniques and Effective Practices (pp. 304-325). IGI Global..
13. Yuan, B., Folmer, E., & Harris, F. C. (2011). Game accessibility: a survey. Universal Access in the Information Society, 10(1), 81-100

14. Kiili, K. (2005). Digital game-based learning: Towards an experiential gaming model. *The Internet and higher education*, *8*(1), 13-24
15. Tang, S., Hanneghan, M., & El-Rhalibi, A. (2007). Pedagogy Elements, Components and Structures for Serious Games Authoring Environment. *Paper presented at the 5th International Game Design and Technology Workshop* (GDTW 2007), Liverpool, UK
16. Ferguson, R., Coughlan, T., Egelandsdal, K., Gaved, M., Herodotou, C., Hillaire, G., ... & Whitelock, D. (2019). Innovating pedagogy 2019: Open university innovation report 7. [16] Schlechty, P. C. (2011). *Engaging students: The next level of working on the work*. John Wiley & Sons.
17. González, C., & Area, M. (2013, July). Breaking the rules: Gamification of learning and educational materials. In *Proceedings of the 2nd international workshop on interaction design in educational environments* (Vol. 1, pp. 47-53). Setúbal, Portugal: SCITEPRESS (Science and Technology Publications, Lda.).
18. Cardador, M. T., Northcraft, G. B., & Whicker, J. (2017). A theory of work gamification: Something old, something new, something borrowed, something cool?. *Human resource management review*, *27*(2), 353-365.
19. *Gee*, *J. P.* (*2003). What video games have to teach us about learning and literacy*. New York, NY: Palgrave Macmillan.
20. Prensky, M. (2003). Digital game-based learning. *Computers in Entertainment, 1*(1), 21–21.
21. Kapp, K. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. San Francisco, CA: Pfeiffer.
22. Patel, D. R., Apple, R., Kanungo, S., & Akkal, A. (2018). Narrative review of intellectual disability: definitions, evaluation and principles of treatment. *Pediatr Med*, *1*, 11.
23. Karadzhov, V., & Zlateva, D. (2024). Digital Marketing Strategies for Black Friday and Christmas. Economics and Management, 21(1), 180-198.
24. Tassé, M. J., & Grover, M. (2021). American Association on Intellectual and Developmental Disabilities (AAIDD). In *Encyclopedia of autism spectrum disorders* (pp. 165-168). Cham: Springer International Publishing.
25. Hersh, M. and Leporini, B. (2013). An overview of accessibility and usability of educational games. In: Gonzalez, C. (ed.) *Student Usability in Educational Software and Games: Improving Experiences*. IGI Global: Hershey, PA, pp. 1-40. ISBN 9781466619876.
26. Piki, A., Markou, M. and Vasiliou, A. (2016). Learning through play: The role of learning and engagement theory in the development of educational games for intellectually challenged children. In: *2016 International Conference on Interactive Technologies and Games (ITAG)* (pp. 1-6). IEEE.
27. Gallagher, D.J., Connor, D.J. and Ferri, B.A. (2014_. Beyond the far too incessant schism: special education and the social model of disability. *International Journal of Inclusive Education*, 18(11), pp.1120-1142. DOI: 10.1080/13603116.2013.875599
28. Fiuza-Fernández, A., Lomba-Portela, L., Soto-Carballo, J., & Pino-Juste, M. R. (2022). Study of the knowledge about gamification of degree in primary education students. *Plos one*, *17*(3), e0263107.
29. Brereton, A. V., Tonge, B. J., & Einfeld, S. L. (2006). Psychopathology in children and adolescents with autism compared to young people with intellectual disability. *Journal of autism and developmental disorders*, *36*, 863-870.
30. Serret, S., Hun, S., Thümmler, S., Pierron, P., Santos, A., Bourgeois, J., & Askenazy, F. (2017). Teaching literacy skills to French minimally verbal school-aged children with autism spectrum disorders with the serious game SEMA-TIC: An exploratory study. *Frontiers in psychology*, *8*, 1523.
31. Dimitrova, I, 2023. Social and moral aspects of justice. https://notabene-bg.org/uploads/articles_pdf/notabene-bg_org-read1429.pdf